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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Short Talks by the Editor



Use the Safety First System

A SAGE piece of advice that was handed around a good many years ago was to the effect that "You won't get drowned in Lake St. Clair so long as you stay on shore." Likewise, no member of the building industry would suffer from accident if he did no work. That, of course, he does not want to do; he wants to continue on the job, and at the same time preserve himself from injury.



Statistics kept by a large Cleveland contracting company regarding accidents—practically all of them minor in character, but serious enough to keep the men off the job for varying lengths of time—are rather surprising. On one job there were

242 accidents. Of this number, seventy-three men sustained bruised fingers from handling materials; thirty-seven sustained punctured feet by stepping on nails protruding from boards left carelessly about the job; eleven sustained cuts on their heads from being hit



by falling materials; seven sprained ankles by slipping and misstepping; seven had their hands cut, and the balance received injuries even more slight.

Thus it will be seen that the greatest number of accidents comes from handling materials; the second largest from stepping on nails, and the third from being hit by falling materials. All of these accidents are preventable. In the first case, the bruised hands come from carelessly handling materials; but in the other cases the fault is partially that of fellow workmen.

With these facts in mind, both contractors and their employes have duties to perform to their fellow workers by lending their help toward preventing these accidents. It appears from the records kept that the more skilled the worker, the less liable he is to be hurt himself or to contribute to the injury of a fellow worker. It is the unskilled, or what is ordinarily called

"common laborer" who needs the most attention from the foreman for the protection of himself and the others working with him.

Accidents have been accepted as a matter of course on building jobs. But there is no denying the fact that there would be fewer accidents if greater precautions against them were taken. All that is needed is the application of common sense.

No workman will step on a nail protruding from lumber if that lumber is not left lying around. Lumber is worth so much now that it is well worth while to take out the nails from that which has been used—for concrete forms, for example—and to pile it out of the way. Any carpenter will select new lumber rather than stop to hammer the nails out of a used piece when he needs an odd length. Thus there is a great saving all around—in lumber and by preventing accidents.



It is a simple matter to so floor the scaffolding that materials cannot be dropped onto the heads of the men passing underneath. Also, the modern metal scaffold brackets make scaffolds that will not tumble.

These are only two of the suggestions that if followed will go far toward preventing accidents on the building job. The application of the "safety first" principle in all branches of the work on a building will prevent many of the injuries that workmen receive.

Another Case of Puncture



Instead of "accidents will happen," make your slogan "accidents must not happen."

✦
METHODS of reducing building costs by utilizing every bit of space in a building,

by space-saving equipment is appealing to prospective owners. Contractors are getting the work if they advise the use of such equipment as space-saving beds, telescopic closets, etc., in the homes they build.

To Relieve the Millwork Situation

LUMBER DEALERS AND CONTRACTORS FACE SERIOUS SHORTAGE UNLESS THEY TAKE STEPS TO INCREASE THE SUPPLY

An Editorial

THERE is, at the present time, a serious shortage in millwork. Information from authoritative sources is to the effect that many manufacturers are as much as four months behind in their orders. The causes of this condition, the manufacturers say, are an enormous demand and not sufficient labor to turn out the work.

There will not be the usual lull in building this winter. It is confidently predicted that builders will be as active during the cold months as they are now. And, of course, building will increase in the spring.

Here is a situation that lumber dealers and contractors, especially those removed from the sources of supply, must meet. And they can meet it by equipping and operating shops of their own, and turning out some of the millwork they will need. Not a large investment is required to enable a contractor or a lumber dealer to manufacture door and window frames and other simple millwork, required for practically every building constructed.

Many Lumber Dealers Operate Shops

There are many lumber dealers who operate small millwork shops in connection with their yards; there also are many contractors who have shops equipped to turn out millwork, and at odd times make up the necessary material required to keep the job going. The rough lumber and short pieces are usually in stock and can be easily worked up into the much more valuable machined product.

The problem of power to operate these machines has been solved by the gas engine, and the electric

motor, where electric current is available.

The old bogie of competition which many contractors and lumber dealers feared when considering the question of equipping and opening a shop has no terrors under the present conditions. Manufacturers of millwork in quantities have all the business they can take care of, and are not in a position to be keen competitors of the smaller shops. In fact, they will welcome the small millwork factories as aids in supplying the present demand. Everyone wants to see the building boom continue, and it can only continue by increasing the supply of millwork.

Millwork Shop Offers Profitable Business Opportunity

This subject of equipping and operating a shop is one that every lumber dealer and contractor should seriously consider. All are in touch with local building conditions and can gauge pretty accurately what the demand for millwork will be during the coming year or two. By making a survey of the conditions and the future possibilities it is not a difficult matter to determine whether it is good business to start a millwork shop.

But the fact remains that the supply must be increased if the building industry is to keep up with the building demands of the country.

Suggestions as to the sort of equipment to install and an estimate of what these machines will cost can quickly be obtained from the manufacturers of wood-working machinery, who are ever ready to co-operate with AMERICAN BUILDER readers.

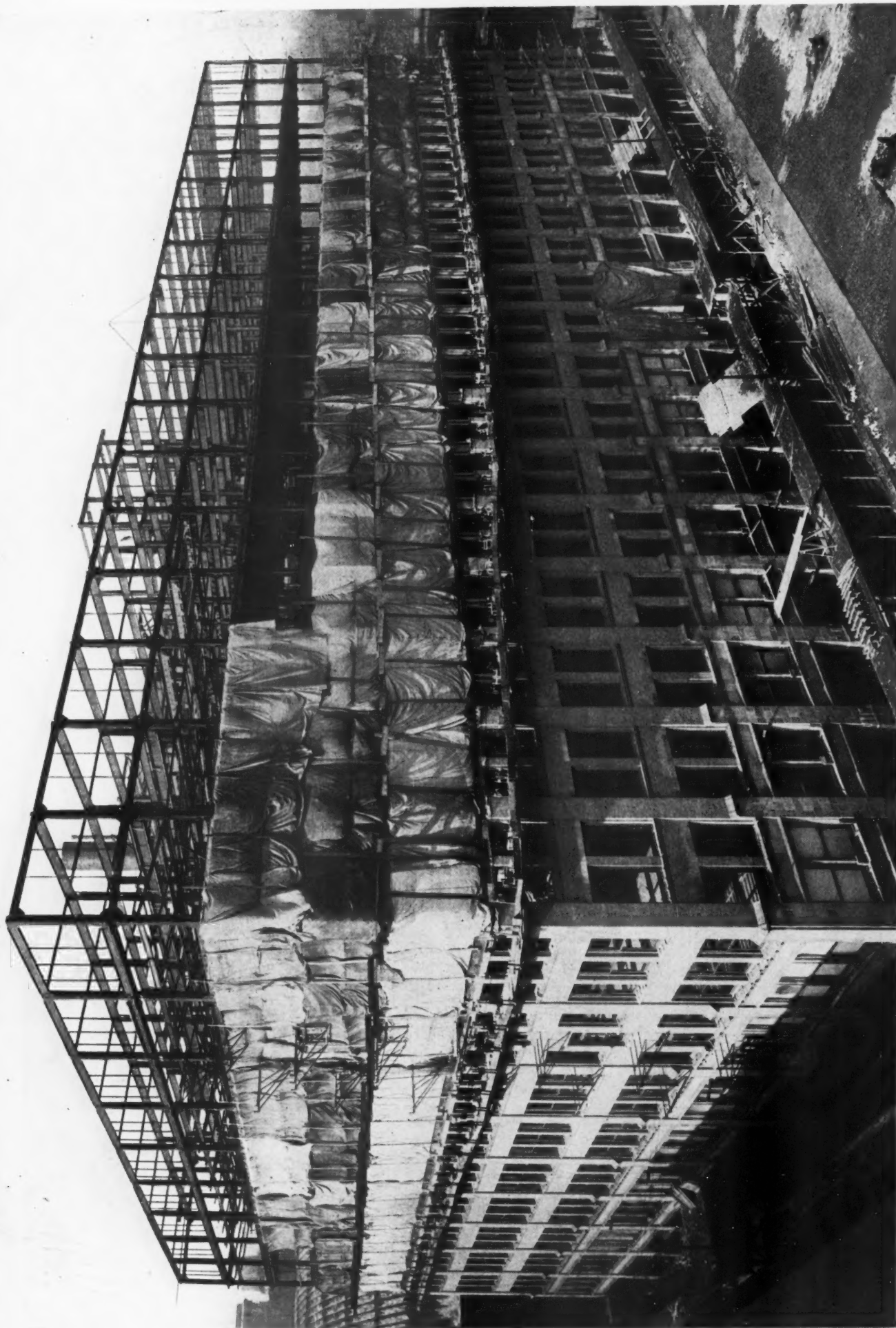


A STREET OF NEW, WELL-DESIGNED HOMES. The need for homes has made building projects as this numerous. These are the sort of homes that are attractive and comfortable and are economical to build. Most of the millwork used in them is of the kind that lumber dealers and contractors can turn out of their own woodworking shops.

THE OLD WAY AND THE NEW WAY OF SPENDING THE WINTER



This Winter of All Winters the Carpenters and Contractors Should Be Busy in Their Power Shop. A Small Amount of Woodworking Machinery Will Turn Out a Surprising Amount of Valuable Millwork.



THE RAND McNALLY & CO. BUILDING, CHICAGO, DURING THE COURSE OF CONSTRUCTION. This building of steel and concrete was finished during the exceptionally cold winter of 1912. The photograph shows how the walls were protected while the concrete was being laid. The canvas was kept going day and night inside of the walls and the outside was covered with heavy canvas, thus preventing the concrete from freezing. The building is sound structurally and no trouble with the walls has been experienced. The Wells Bros. Construction Co., Chicago, had the contract for the building.

Winter Building the Only Answer to the Year's Construction Delays

CONCRETING IN COLD WEATHER OFFERS STRONG ADVANTAGES TO OWNERS

By P. D. Van Vliet

of the Wells Brothers Construction Co.

ON the verge of winter, construction blocked in hundreds of cities, a shortage of many materials of construction and of labor and yet withal, an acute shortage of homes, offices, stores and in many cities, of office buildings, factories and warehouses—what is the answer?

The answer lies in winter construction, in proceeding with work during December, January and February, which have been normally "closed" months. Winter work is not new. It has been practiced for years, its safety adequately demonstrated, its economy proved. It should be more generally practiced.

Any owner who, thru prosecuting work during cold weather, can get occupancy of factory or warehouse or can lease apartments, offices or store space on May 1, stands to gain far more than the added costs of winter work.

Not only the owner, but builder, engineer and architect, gain. There is financial loss to the contractor who breaks up his trained organization, only to build it again in the spring. New men must take time to accustom themselves to working together and owners pay the bill in increased costs. Architects' and engineers' offices are frequently idle thru much of the winter. Building superintendents have nothing to do and owners pay for unproductive overhead.

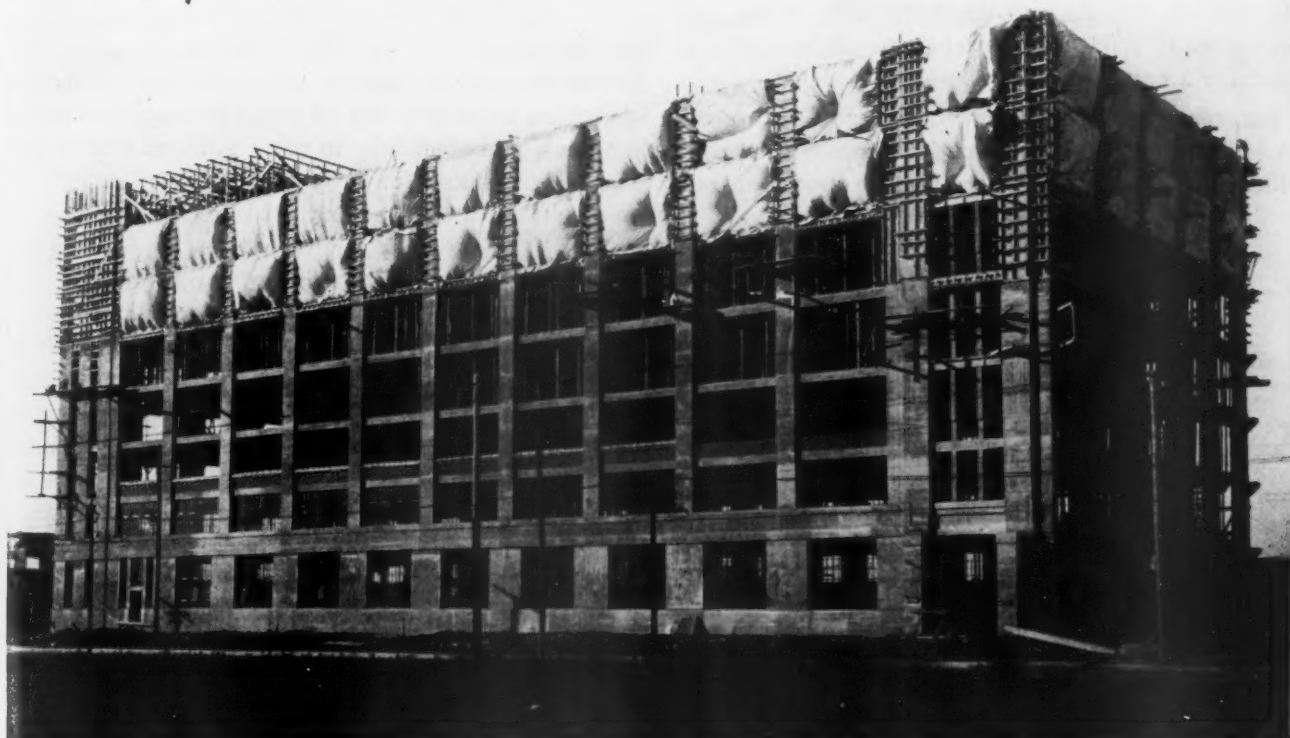
Perhaps the best way then, to reduce the cost of building is to keep architects', engineers' and contractors' forces busy twelve months of the year.

Why Does Construction Stop in Winter?

Primarily the reason why building has been inactive is that concrete does not harden so rapidly when its temperature hovers near freezing. But we heat our homes, offices and stores and coal is a comparatively small operating cost. We are today able to enclose a structure, warm it with simple coke stoves, heat aggregates prior to mixing with portland cement, and keep the concrete or mortar warm until hardening has occurred.

Without these precautions, cold weather work is impossible but the precautions are simple and reasonably inexpensive. Why not do the logical thing and consider the winter as an open season for all but the most exposed class of construction?

Our organization has continued to lay brick and place concrete under zero temperatures even in the northern cities of Canada. A part of our normal equipment is sufficient tarpaulins to enclose practically any structure and sufficient salamanders or coke stoves to keep such enclosures warm. Boilers of any type, frequently those used to furnish steam for hoist-



EVEN IN THE EXTREME TEMPERATURES OF CANADIAN WINTERS CONCRETE BUILDINGS ARE ERECTED. The photograph shows a building put up in the winter of 1915 for the Robert Simpson Co., Regina, Sask.

THE RAND McNALLY & CO. BUILDING, CHICAGO, DURING THE COURSE OF CONSTRUCTION. This building of steel and concrete was finished during the exceptionally cold winter of 1912. The photograph shows how the walls were protected while the concrete was being poured. Salamanders were kept going day and night inside of the walls and the outside was covered with heavy canvas, thus preventing the concrete from freezing. The building is sound structurally and no trouble with the walls has been experienced. The Wells Bros. Construction Co., Chicago, had the contract for the building.

ing, supply live steam for heating aggregates and water and for thawing snow and ice from forms and reinforcing steel.

While a heavy snow may temporarily delay the delivery of materials, yet deep snow is seldom encountered. It is temperature alone that commonly hampers work, and temperature need not be feared.

Plant Layout For Cold Weather Work

In laying out a plant for handling concrete in winter, or where the work is likely to run on into winter before completion, there must be provision for the proper heating of materials and water. In case of sand and gravel in open storage piles, it is only necessary to lay a grid of steam pipes under the material piles and place a tarpaulin over the pile. From one main thru the center, branches should extend in both directions every six feet. These branches should be drilled with $\frac{1}{8}$ -inch holes spaced about 18 inches apart. Several hundred yards of material stored in one pile can be heated in this way with the steam from an ordinary hoisting boiler. Several days prior to concreting, steam should be turned into the pile during working hours which will be sufficient, except at times of extreme cold, to maintain the necessary temperature.

When material is stored in bins, a series of pipes should be laid on the floor of the bins, feeding from a main pipe at the top of the sloping floor. Steam radiates thru the entire contents of the bin and if a canvas cover is pulled over the top when work is stopped at night, the material will retain its heat, except in very cold weather, when a small amount of steam may be needed at night.

It is necessary also to heat mixing water and a steam line running directly into the water tank is the customary way; a one-inch line being sufficient to heat water for a one-yard mixer.

But concrete poured into forms exposed to cold would lose its heat before hardening had progressed sufficiently. Forms must therefore be protected, and

the most satisfactory means is a complete canvas enclosure, with salamanders or coke stoves to maintain a temperature of 45 degrees or over within. Several hours before concrete is poured, salamanders are started in the story below the forms unless that story is already heated. Immediately after pouring, a sufficient number of salamanders are placed above the new concrete to insure its safe and thoro hardening. These will furnish heat for the floor above.

This method of enclosure and heating necessitates that the form work for the floor above that being poured shall be in place, in order to serve as a roof under which concrete may be kept warm; altho in the case of steel frame structure, it may be possible to support canvas upon the steel because of the floor above.

Forms for Winter Work Constructed in Usual Way

Forms for the story above are supported as usual, upon posts, but since the floor slab of the story supporting these posts is not yet poured, it is customary to set the posts upon concrete blocks of the proper depth so that upon pouring, the block becomes a part of the finished floor. This requires setting blocks to grade and finishing their upper surface.

It is, of course, necessary that the workmen be watched somewhat more carefully on winter work. Snow or ice in the forms is detrimental to good work. Careful inspection is necessary at every stage of the work, but slipshod methods are probably no more likely to effect quality in winter than in summer.

Where the enclosure in canvas is comparatively complete, workers operate at practically normal efficiency, but there are some delays likely to occur thru slow delivery of materials during periods of snow. Yet the added costs are more than compensated for by the certainty of quicker occupancy and reduction of interest on money tied up in the incompleting building. It would seem folly to cease work on a structure where there is need of early use.



Cold Weather Concreting Practical for Rural as Well as City Work

THERE is a well organized movement on foot among contractors doing country work to extent farm concreting operations as far into the winter as possible. Sound economics justify even a more intensive educational campaign than that now being conducted by contractors and cement manufacturers.

Common labor is more plentiful in farming communities in the late fall than at any time thruout the year; building labor in the towns



Showing How Corrugated Steel Culvert Pipe Is Used as a Heater for Concrete Materials in Freezing Weather.



Short Lengths of Steel Culvert Pipe in Which Fires Can Be Built Are Used to Heat Aggregates for Cold Weather Concreting.

is more plentiful than during the spring or summer. Building material deliveries improve as the demand drops off in the fall, and in normal seasons prices frequently gravitate downward to some extent. Fall is the best time of the year to promote building operations on the farm, because at this season farmers have money received in return for the season's crops, and they naturally feel more like spending than at times when they have less money at hand. Fall is the logical time to build new structures and repair old ones, for work of this kind done on the approach of winter immediately begins to earn dividends in the shape of protection for animals, crops, equipment and those who must attend to the routine farm work thruout the cold winter months.

The Advantage of Building Now

The present outlook in the general building field gives every reason to believe that farmers who decline to go ahead this fall with the building of such structures as barns and residences may be compelled to wait a year, only to face then about the same conditions which present themselves as arguments for not building now. Building operations the country over are very much behind requirements. About \$4,000,000,000 worth of dwellings alone are required to catch up with the demand. Cities feel this need keenly, and building in the larger places will probably proceed next season at two or three times the normal rate. Building wages, already high, are likely to go higher in the cities; unless some unforeseen element interferes, this will create a much greater scarcity of building labor in the country than has been experienced in the past.

How to Prevent Mixture From Freezing

If contractors proceed immediately with concrete foundations and low walls of buildings before weather conditions become extreme, precautions against freezing will be simple and inexpensive to carry out. Heating of the mixing water, sand, pebbles or stone and frequently protecting the finished work with building paper, straw or tarpaulins are usually sufficient protection for foundations and low walls at temperatures as low as 10 degrees below the freezing point.

Early completion of the concrete work will make it possible to proceed with frame super-structures during colder weather.

Interior concrete floors can be laid at any time if sand and stone are heated to 70 or 80 degrees and the water to 150 degrees, provided, the temperature within the building is kept above freezing for two or three days. It must be remembered that under cold weather conditions concrete hardens slowly and therefore floors must not be used too soon. Where it is desired to subject the floor to vehicle and animal traffic, a protective cushion of dirt or straw should cover the surface for at least three weeks.



Concrete Materials for Winter

NOW is the time to estimate winter requirements for sand and gravel and get a plentiful supply on hand. Each year sees many profitable concrete jobs shut down because of impossibility of obtaining sand and gravel from frozen pits. If there is any more discouraging work than attempting to get sand and gravel from a frozen pit, it has not come to our notice. Concrete products plants will be justified by present and prospective volume of business in running all winter, but obviously they cannot do so unless sand and gravel is obtained before the pits close down.



KEEPING after prospects brings contracts, just as everyone finally succumbs to a life insurance salesman or a book agent.



OWN a Home Savings Clubs and Farm Improvement Savings Clubs mean more business for every person connected with the building industry. If a bank in your community has not yet started a club, or evinced an interest in the idea, the quicker this plan is brought to the attention of its officers, the better. Bankers are quick to realize the advantages to themselves and their banks of any plan that will induce people to save money. To own a home is the greatest of incentives to save, and will induce people to start accounts.

How to Build a Concrete Block Garage

DEMAND FOR HOUSES FOR AUTOMOBILES IS LARGE—PLANS AND PERSPECTIVES OF SEVERAL GOOD DESIGNS.

THE enormous increase in motor vehicles during the past few years and the comparatively smaller number of garages built during the corresponding period has resulted in an unusual demand for storage facilities for motor cars and trucks. The total number of motor vehicles registered in the various states in 1918 was nearly 6,147,000 which exceeded the 1917 registration by over 1,000,000.

The man who owns his own home usually prefers to keep his automobile in a garage on his place. The private garage offers the advantages of accessibility, saving in rental and opportunity to make his own repairs, do his own cleaning and store quantities of oil, grease and other supplies which he is thus enabled to buy in larger amounts. It is important that the private garage have plenty of light and room enough for workbench, locker and shelves for tools and supplies. Every garage should have a concrete floor with sewer connection and should be equipped with running water and, if possible, with electric light. Provision for heating is optional.

Plans for a Single Car, Concrete Block Garage

The accompanying plans show a single car garage of concrete block which will be found well adapted to average requirements. Since the over-all length of the smallest car with the top down is 12 feet 9 inches, and that of the large automobiles is from 17 feet to

18 feet, some modifications as to length of structure may be desirable, depending upon the size of the car it will house. The width of 12 feet is recommended as standard.

The foundation is shown of monolithic concrete, but may be of block above the footing walls of the



Two Concrete Block Garages of Blocks with Rough Surfaces.

garage above the foundation line requiring 407, 8x8x16-inch straight blocks, 108, 8x8x16-inch corner blocks and 42, 8x8x8-inch corner blocks. In addition, there are required five window lintels 8x8x48 inches and one door lintel 8x8x9 feet 4 inches. The door lintel is reinforced with 3, one-half inch steel rods, two of which are bent up to form stirrups as shown. There are also required five regular window sills 32 inches long. If block are used in the foundation above and



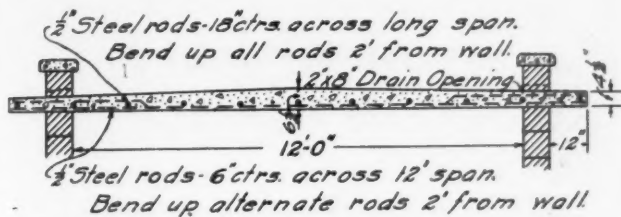
A Single Car Garage of Smooth, Granite Face Concrete Blocks. The Garage Is Unfinished, But Will Have a Roof of Concrete Tile. The Walls and Roof Correspondent to Those in the Adjoining Residence.



Rock Face Concrete Block Garage. Attractive Doors Add Greatly to the Appearance of This Garage.

spread footing, 50, 8x8x16-inch block will be required for each course.

The best surface effects are obtained by avoiding block of rock face pattern. Smooth face block with or without rock face corner block, or the entire job



SECTION OF CONCRETE ROOF

Section of Concrete Garage Roof Reinforced with One-Half-Inch Steel Rods.

of tooled surface block will prove more attractive than the rock face design. If the garage adjoins a residence with stucco, exterior stucco block should be used and the surface given a stucco coat corresponding to that of the residence.

The simplest type of fire resisting roof consists of cement asbestos shingles or cement roofing tile on wooden framing with ceiling of cement plastered on metal lath.



Portland Cement Association Plans to Promote Building With Concrete Block

SOME of our builders who have devoted themselves consistently to the development of concrete for structural purposes have been casting around to discover why the Portland Cement Association should clasp concrete highways to its bosom and at the same time leave its more promising baby, concrete structures, waiting for similar manifestations of parental interest.

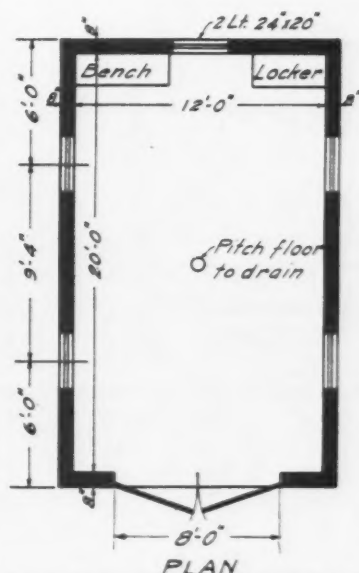


Pleasing Effects Are Obtained by the Use of Concrete Blocks with a Variety of Faces. Plain Face and Rock Face, with Stucco and a Belt Course at the Sill Line, Make This Garage Attractive in Exterior Appearance.

A. J. R. Curtis, in a paper before the recent meeting of the Portland Cement Association at Cleveland, sheds an interesting light on the situation. Mr. Curtis' paper indicates tremendous new interest in concrete block and an awakening of the concrete block manufacturers to the possibilities for first class plain face block. His paper shows that conditions in the block industry are rapidly becoming such that the cement manufacturers can well afford to turn the heavy guns of their promotion battery on the structural market, and plans for the coming season are said to include intensified activities along these lines.

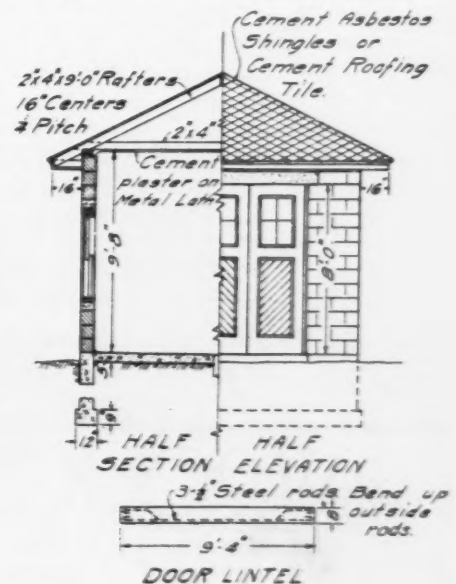


NO one thing put into a home brings greater satisfaction to the owner than an efficient and adequate heating plant. A cold house is a dreary place, while a warm house is a cheery home. Builders have a distinct service to perform for their clients when they help pick out the right sort of a heating plant.



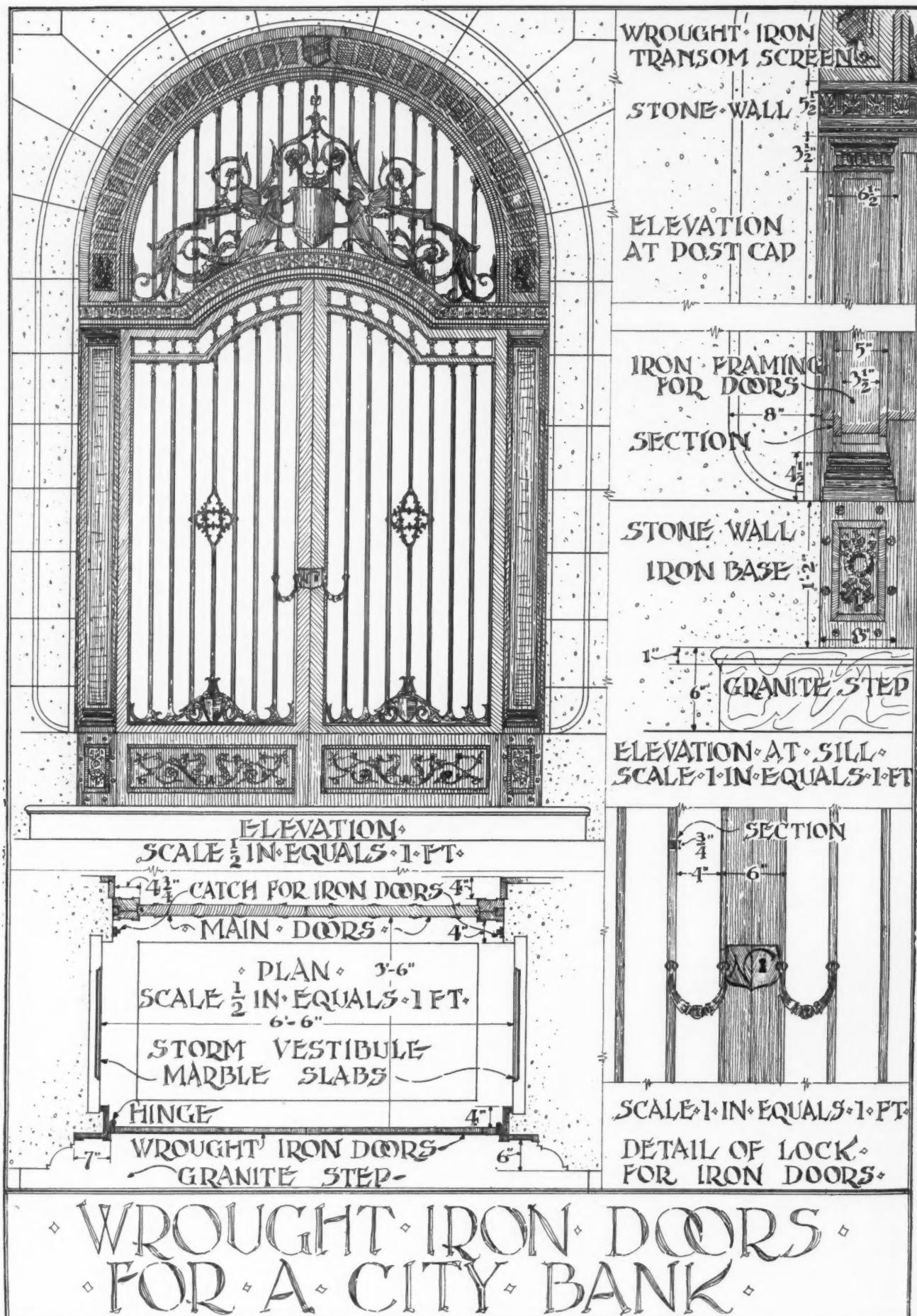
PLAN

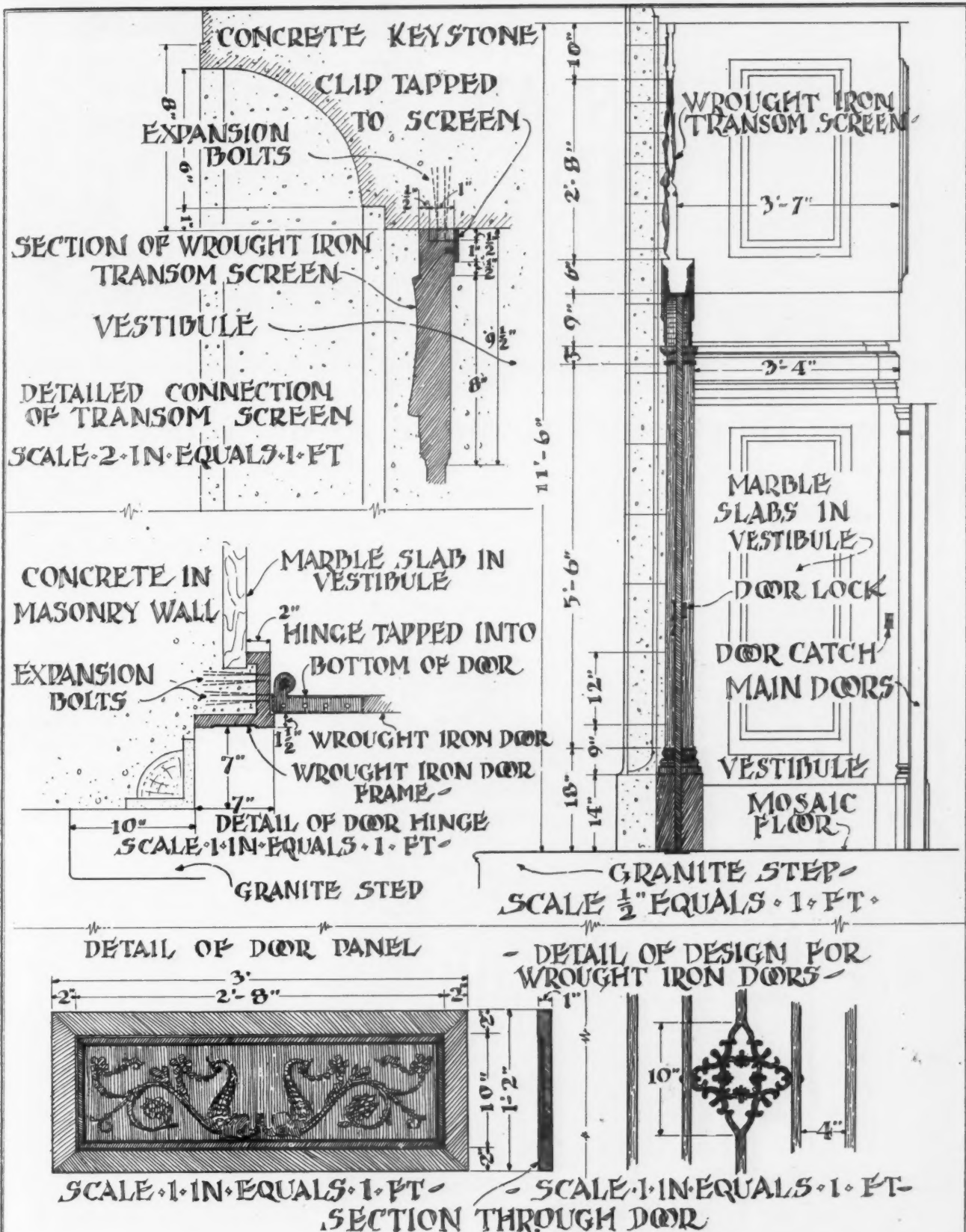
Floor Plan and Half Section and a Half Elevation of a Concrete Block Garage, Showing Standard Methods of Construction.



HALF SECTION ELEVATION

DOOR LINTEL





WROUGHT IRON DOORS FOR A CITY BANK



Many Apartments in Building on Small Lot

BUILDERS in the larger cities are meeting the need for homes by erecting buildings containing many small apartments. Two and three-

room apartments are the present-day standards, but the rooms are so designed and equipped that the occupants have the efficiency of four and five rooms.

This brings the building cost per apartment to a point where the investment pays big dividends to the owner.

The amount of apartment house building going on in the larger cities is really surprising. But rents are high and the ability to make all the rooms, except the kitchen, do double duty, thereby cutting the cost per apartment, has brought about a boom in this class of building construction.

Architects are exercising great ingenuity in designing these apartments. That is shown by the apartment house pictured in the accompanying illustration. Here is a three-story building, erected on a lot 37 feet 6 inches wide, that contains 14 three-room apartments. However, each apartment, thru the use of space-saving beds, has the accommodations of five rooms, without the work required to care for that many rooms.

This building is of brick construction on a concrete foundation and has cut stone trim. The exterior is attractive because of high gables over each sun parlor projection and the manner in which the trim was set into the face brick walls.

The ingenuity of the architects is shown by the floor plans. Four



Apartment Building on Narrow Lot Containing Fourteen Three-Room Apartments.
E. J. Ohrenstein & Hild, Architects, Chicago.

three-room apartments are on each of the three floors, and there are two three-room apartments in the basement. The apartments at the front of the building have three rooms, sun parlor and bath; those at the rear three rooms, bath and a good-sized porch. Both living and dining rooms are equipped with space-saving beds, thus providing two sleeping rooms, and giving each apartment five-room efficiency.

The unusual feature of this building is the stair arrangement. The entrance is thru a vestibule in the basement. Near the front are the stairs leading to the front apartments, while in the center of the building, reached by a hallway, are the stairs leading to the rear apartments. The apartments are faced in different directions, but a short hall in the rear apartments provides an entrance into the dining rooms, thus avoiding the kitchen.

Altho this appears to be a great number of three-room apartments for a building on such a narrow lot, the rooms all are of good size. The living rooms at the front are 12 by 16 feet; the dining rooms are 12 by 14 feet, and the kitchens are 9 by 12 feet 6 inches. The living rooms at the rear are slightly larger, being 13 feet by 15 feet 6 inches.

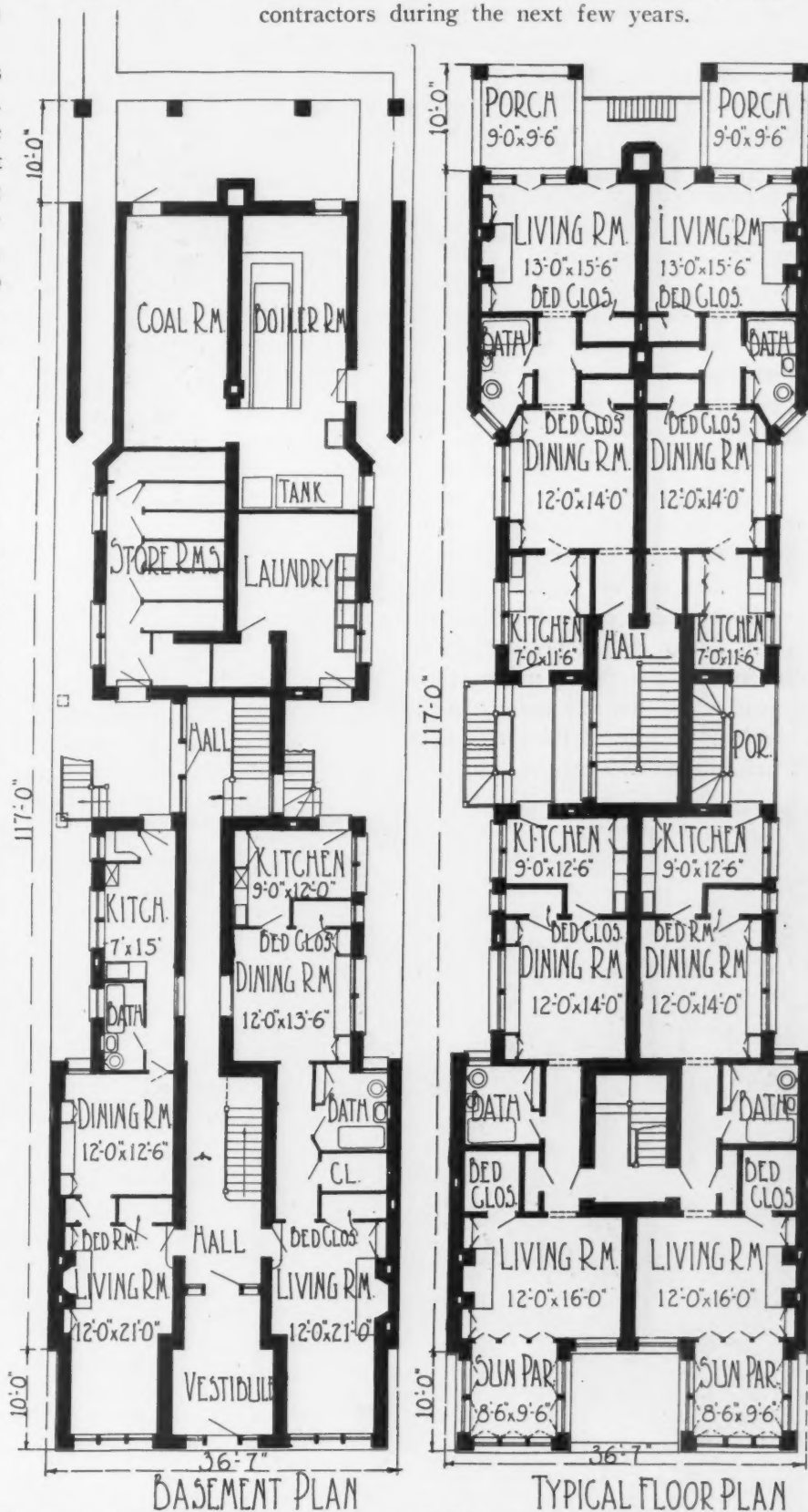
This building was erected about five years ago and was among the first in Chicago to be equipped with space-saving beds. The buildings being put up this year are all so equipped, altho there may be a few exceptions. Builders found that apartments such as these rented more readily than those containing more rooms and that they commanded as high rentals as larger apartments.

Now that investors are assured of good returns on their money in this class of building, they are going ahead rapidly. The small apartment undoubtedly has solved the problem in cities of meeting the higher building costs.

Small apartments are in demand, tenants really preferring to have homes that do not require

so much furniture, and can be cared for with less labor. The latter feature of the small apartments solves in a great measure the shortage of domestic help.

Considering the smaller building costs, the convenience to the tenants and the other advantages that have been enumerated, apartment buildings containing small units will provide a great amount of work for contractors during the next few years.



Basement and Typical Floor Plans of Narrow Building Containing Fourteen Three-Room Apartments.

Some Side-Lights on the French Middle-Class Home

By William A. Radford, Jr.

Who Is on a Trade Mission Around the World for the
AMERICAN BUILDER

PARIS, FRANCE, October 1, 1919.—There is an old saying credited to Francis Bacon that the French are wiser than they seem and that the Spaniards seem wiser than they are. I haven't had a chance to study the Spaniards from a close-up view, but as far as the French are concerned, Bacon certainly stated the facts in his epigram.

It is common knowledge that the American tourist in his first visit to France usually forms a rather snap judgment of the Frenchman, both industrially and socially. After wandering around in France, however, the Yankee tourist gets a new slant on things. He gets away from the habit of contrasting French conditions and methods with their American counterparts. He finds that to really know and appreciate the Frenchman, France and its people must be taken as a thing apart. The idea is to leave the standards of the home folks at home, where they belong.

One outstanding characteristic of the Frenchman is his economy in all matters of business and daily life. Economy is a fine art with the Frenchman, and four years of war have intensified this practice of utmost saving. Altho the people are not penny-wise and dollar-foolish, there are many stories of how the Frenchman, economizing strictly in petty matters, has overlooked the bigger things. As an instance, last fall before the armistice the apple crop in Normandy

was immense. These trees were loaded with ripened fruit as never before, but, alas, there was no labor to be had for harvesting. The town mayors, the department prefects, the commune leaders—everybody got



The Modern House in France, Like This Villa at a Famous Watering Place, Compares Favorably with Its Counterpart in America.

together and discussed the situation. In the meantime the apples rotted, and the land owners as well as the nation lost heavily thereby. After it was all over an agriculture leader came out with the statement that he could easily have saved the whole crop, but he thought it would cost too much. He pointed out that there were from five to ten army camps in Normandy at which the 1920 class of young Frenchmen were in training. Some of these men could have been requisitioned for ten days or two weeks to harvest the apple crop at the expense of the government, but the government, said this chief, could not very well be expected to pay for farm labor. It really was a case of false economy on the part of a state authority.

Architecturally an Eye-Opener

Architecturally speaking, France is a veritable paradise for the student of architecture. The architectural style is, of course, periodic, but geography also has had a vast bearing on the style of construction.

Paris has its wonderful state buildings, museums and cathedrals. These buildings, as well as the magnificent cathedrals and churches thruout France, are so well known by the average American that a description of them here, aside from not doing justice to the subject, would be unwarranted.

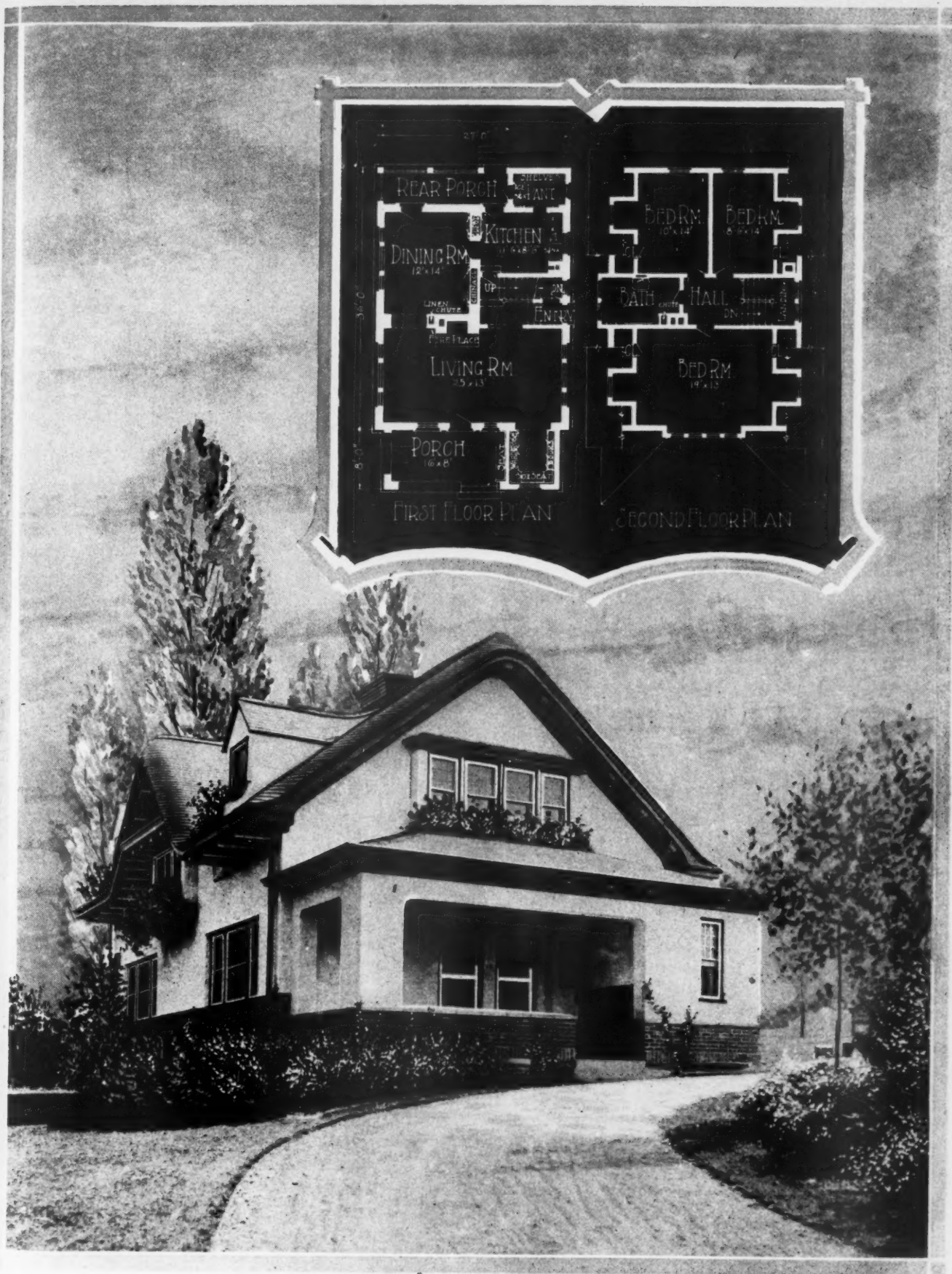
The house of the French middle and lower classes, however, is another thing. How the average French citizen lives is a matter not very well known, so perhaps a few words setting forth some of the features of the middle-class home may be interesting.

(Continued to page 106.)

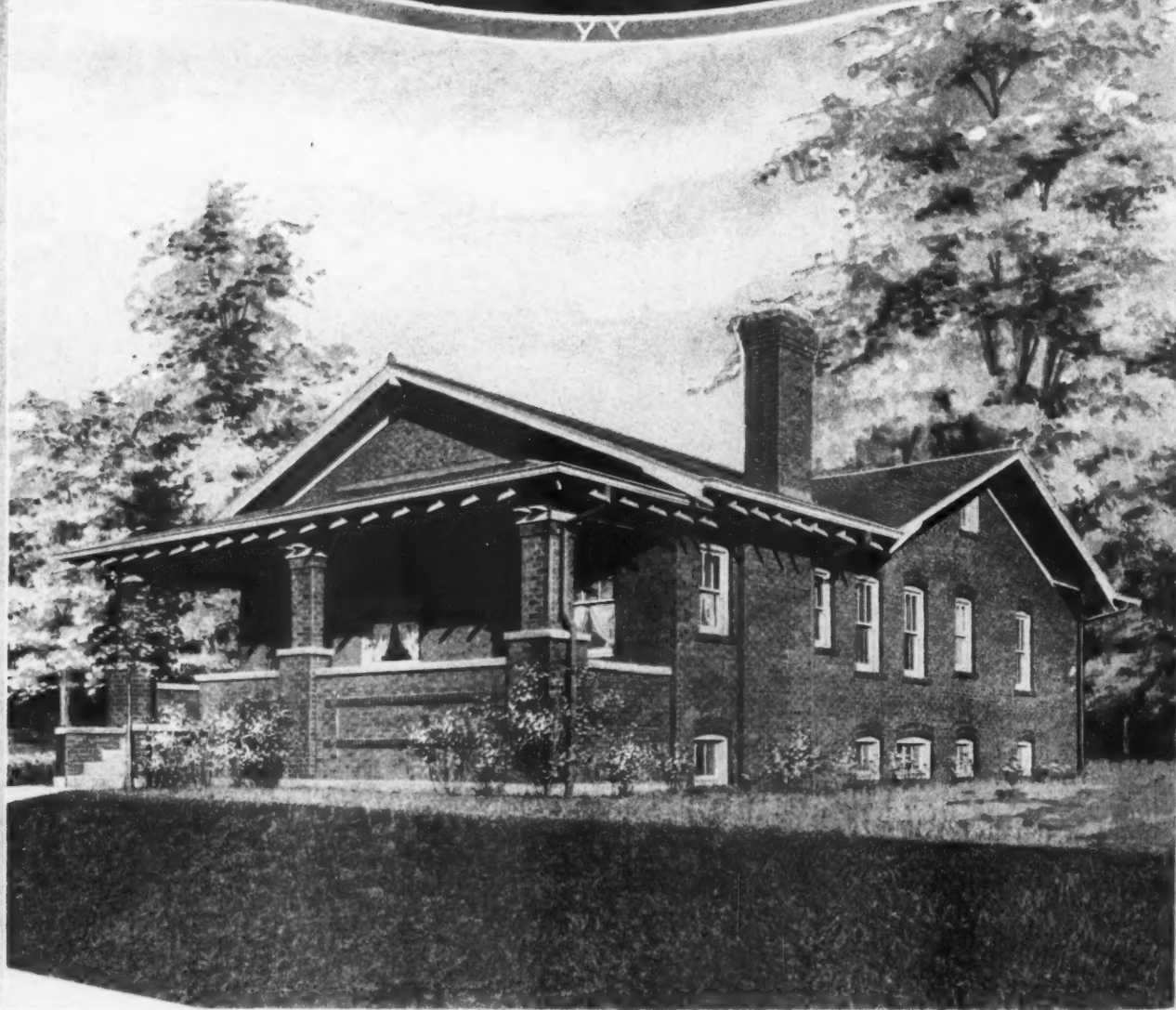
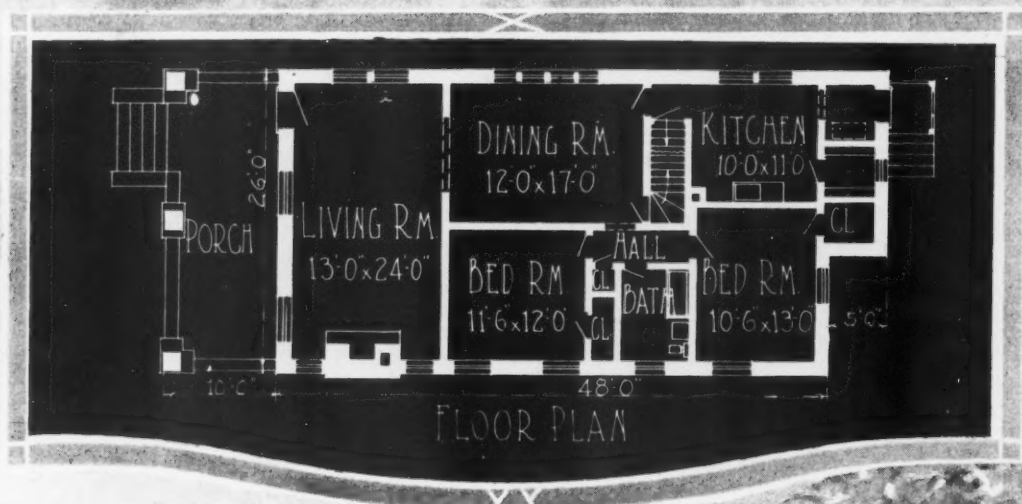


The Residences of the Middle Class Crowd the Back Streets. They Are the Tie Between the Present and the Revolution.

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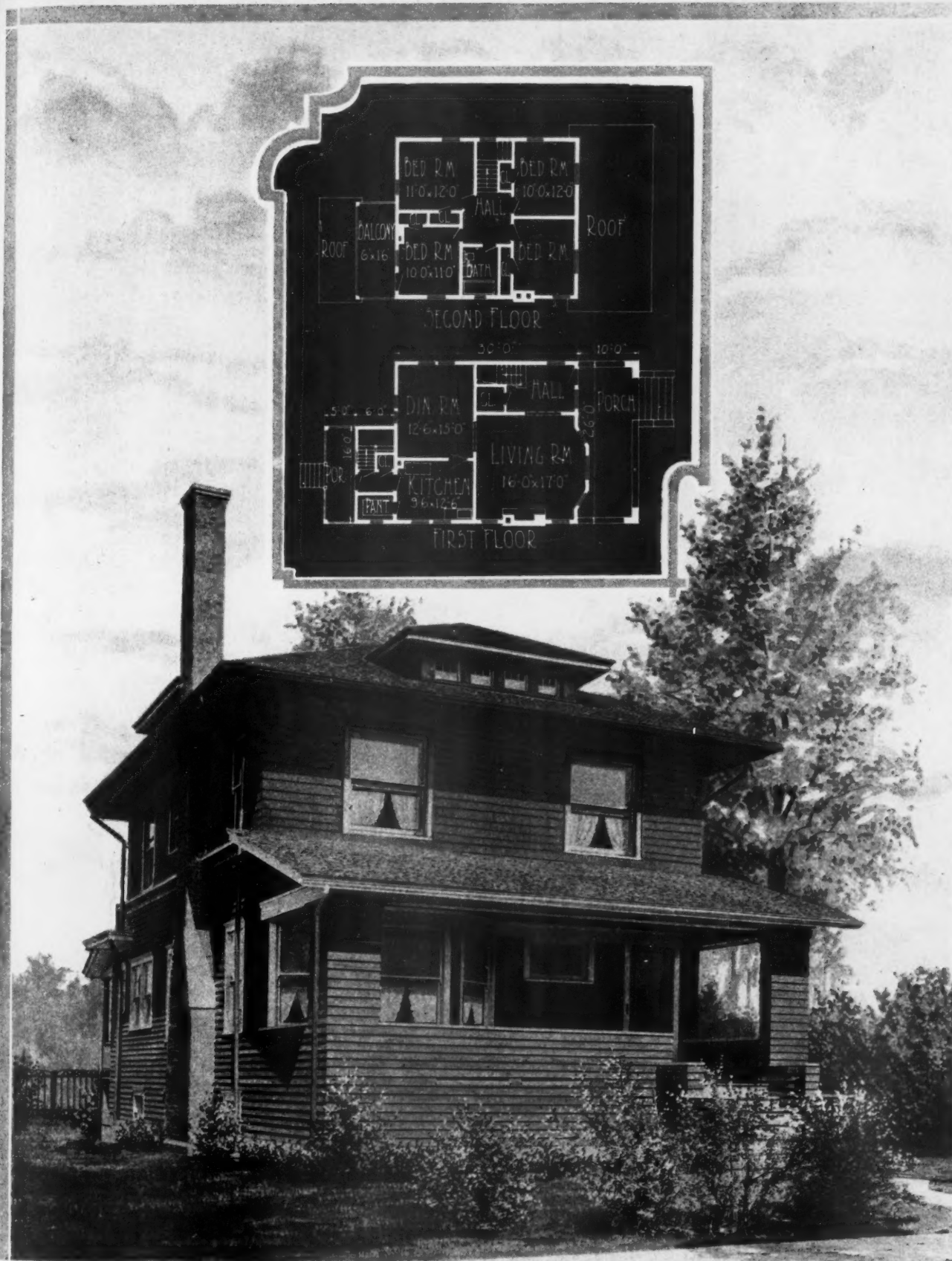


STUCCO AND BRICK HOUSE WITH THATCHED ROOF. A Thatched Roof Always Gives a Home an Attractive Appearance, But the Home Shown in This Design Is Exceptionally Good. The Brick Walls to the First Floor Sill Make a Strong Contrast With the Stucco, While the Graceful, But Irregular Roof Lines Are Pleasing. The House is 27 by 36 Feet in Dimensions, and Contains Six Well-Arranged Rooms. On the First Floor Are a Large Living Room, 13 by 25 Feet, Dining Room and Kitchen; on the Second Floor Three Bedrooms, One of them Nearly as Large as the Living Room, and the Bathroom. Solid Comfort and Convenience in Caring for the Home Will be the Lot of the Owner Who Builds from This Design.

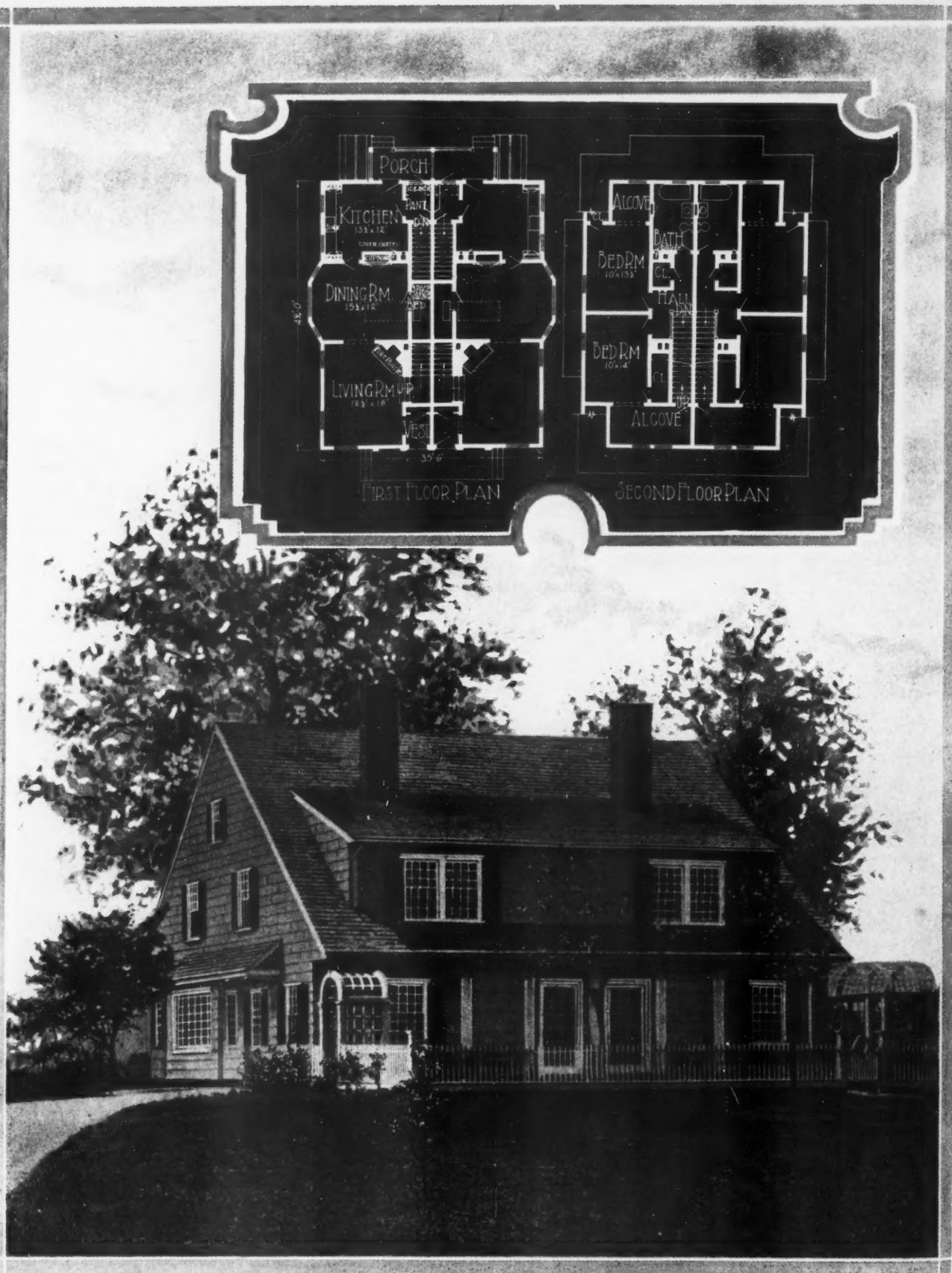


AN EXCELLENT BRICK BUNGALOW DESIGN. Five Good Rooms Are Contained in This Brick Bungalow, Altho Its Dimensions Are Only 26 by 48 Feet, the right Size for a Comparatively Inexpensive City or Suburban Lot. The Bungalow is of Standard Brick Construction on a Concrete Foundation. The Living Room, 13 by 24 Feet, Extends Across the Front of the House, With Dining Room and Kitchen at the Rear on One Side, and Two Bedrooms With the Bathroom Between on the Other. The Exterior Is Unusual for Brick Bungalows, as the Roof Treatment Takes Away the "Squat" Appearance and Gives It Height. The Large Porch With the Pergola Effect in the Roof Is Another Attractive Feature.

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SEVEN-ROOM, HIP-ROOF FRAME HOUSE. This is the type of house that always is in demand. It is only 26 x 30 feet in dimensions, but it contains seven good rooms, living and dining rooms and kitchen on the first floor, and three bedrooms, den and bathroom on the second. The 10-foot porch, extending across the front of the house; the hip roof with dormer in the front and the lapped siding give the house a good exterior appearance. The floor plan shows how excellently and compactly the rooms have been arranged. Over the pantry extension at the rear of the house there is a balcony, 6 by 16 feet, which can be enclosed for a sleeping porch.



AN ATTRACTIVE DOUBLE HOUSE. Economy in the Cost of Construction Make a Double House Most Desirable to Present-Day Home Builders. Here Is a Design for Two Houses, Each Containing Five Rooms and Bath. The Exterior is of the Dutch Colonial Style of Architecture Which Is Most Popular. Three Rooms, Living Room, Dining Room and Kitchen Are on the First Floor, and Two Bedrooms and Bath on the Second. A Space-Saving Bed in the Dining Room Adds an Extra Bedroom. The dimensions of the Building Are 35 Feet, 6 Inches by 42 Feet. The Two Upstairs Rooms Are of Good Size and Each Has an Alcove That Makes Them Attractive, as the Alcove Windows Are in the Dormer.

OWN A HOME-SAVINGS CLUB

Home Building Remodeling

Modern Improvements



Savings Club Idea Spreads

BANKERS, MANUFACTURERS, LUMBER AND MATERIAL DEALERS, REAL ESTATE MEN AND CONTRACTORS
ENDORSE "OWN A HOME" AND "FARM IMPROVEMENTS" SAVINGS CLUB PLANS.

Agree to Co-Operate in Movement to Promote Building—Some Explanation and Details of the Plan

THE announcement in the October issue of the AMERICAN BUILDER of the plan to establish "Own a Home Savings Clubs" and "Farm Improvement Savings Clubs" to promote building has met with a response on the part of the members of the AMERICAN BUILDER Family which demonstrates that they are alive to their opportunities and want to co-operate in every good movement of this kind.

Many hundreds have endorsed the plan and have expressed a desire to do everything possible in their communities to get these Savings Clubs established. The endorsements have come from members of every branch of the building industry—contractors, lumber dealers, architects, real estate men and others interested in building—from bankers and from manufacturers who are interested in building only indirectly. Such unanimity shows that the Savings Clubs plan is sound in theory and will get the wholehearted support of everyone.

Many of those who have asked the AMERICAN BUILDER for more complete information about the "Own a Home Savings Club" and "Farm Improvements Club" plan have taken occasion to write letters expressing their ideas

of this great movement. For the benefit of those readers of the AMERICAN BUILDER who have not already taken hold of this idea to promote building, some of these letters are given in whole or in part. They demonstrate that this method of promoting home building, home building improvements and farm building is going to become a part of the business of thousands of banks.

To Encourage Home Builders

It was urged at the St. Louis convention of bankers that bankers should lend money to prospective home-builders more readily and on easier terms. This on the theory that the man who has ambition to own a home is no bolshevist, no radical upholder of wild theories, and that to help liberally in the building of a home is a patriotic duty, making for the solidity and permanence of this government.

A Seattle financier told the convention that the bankers might speedily relieve the housing situation if they would all over the country where houses are needed—and that is nearly everywhere—encourage men who want to build and to establish homes. He insisted that these men deserve far more consideration than they have received. They are, in general, the more substantial, dependable citizens of a community. He is a good citizen not a dead beat or a cheat who wants to own a home. His loan, therefore, should be the safest of all loans, and it should be made with the least question, provided reasonable conditions of security are complied with.

It is very likely that the arguments offered in favor of more liberality in this direction will have weight with all the bankers. Sure it is that the business that helps along home-buying or home-building is doing a constructive public work, relieving an urgent need, and making more solid the foundation of civic conservatism on which this nation must depend to keep down the wave of radicalism that is threatening to deluge the world.—Moline (Ill.) Dispatch, Oct. 6, 1919.

Bankers Are Interested

Here is what a banker says:

In looking over the AMERICAN BUILDER I notice your article on "Own a Home Savings Clubs," and am enclosing the request coupon.

While I am not a builder in the accepted meaning of that word, yet in a measure every banker is a builder if he follows a high ideal. He may not build houses, but he is building economy and thrift, out of which grow savings that are invested in homes.

I should like very much to have any information which you have to offer, as we are opening a Christmas Savings Club this year, and if your club is what we take it to be we see no reason why the two would not work together in harmony.
—The Peoples Savings & Banking Co., by E. F.

Crites, Secretary and Treasurer, Barberton, Ohio.

Other bankers have written in the same spirit, showing that the building industry will have the support of the bankers in inaugurating these clubs.

"This Is a Big Idea," Says a Manufacturer

Here is what a motor truck manufacturer says:

This is a big subject, and if your readers co-operate with you the results cannot help but be very beneficial to the country in general. As a rule home owners make the best citizens and if you can increase the number of home owners in America you have done a great work.—Acme Motor Truck Co., by W. A. Carpenter, Detroit, Mich.

Such a Plan Needed, Asserts Lumber Dealer

The following letter comes from a dealer in lumber and building materials:

Your article in the October AMERICAN BUILDER on "Home Financing Solved" appeals to me. We are greatly in need of homes in our town, but how to help prospective builders get together the initial payments is the stumbling block in the way of home building in the minds of men who are working for a daily wage. If they can provide for the initial payment, the installment payments following could be met easily.

I believe your "Own a Home Savings Club" and "Farm Improvements Savings Club" plans will throw light on this subject, and I would be pleased to have you mail me literature in connection with the scheme, so I can place it before our chamber of commerce and our banker, thereby enabling us to get an enthusiasm back of the movement to place in their own homes

many who are living in limited rented quarters, and those who live in adjacent towns and come here daily to work.—C. D. Blair, Montour Falls, N. Y.

Contractors Ready to Co-Operate

The readiness of contractors to co-operate by bringing the "Home Savings Club" and "Farm Improvements Club" plans to the attention of bankers is shown in the following letter:

We are having Mr. L. G. Blackman, of the First National Bank, of this city, write you in regard to the "Own a Home Savings Club." Please encourage him and send him all the information you have.

We are very much interested in this, and would like you to show us exactly how to put this on.—Brannon & McGowan, General Building Contractors, by Earl Brannon, Equality, Ill.

The Opinion of Real Estate Dealers

And here is what a firm of real estate dealers think of the plans:

We are subscribers to the AMERICAN BUILDER and heartily endorse the "Own a Home Savings Club," which was announced in the October issue. We would like information and details concerning this movement, as it is necessary to "sell" houses and buildings nowadays, instead of letting them sell themselves—instead of letting the automobile man sell his auto, and the victrola man sell his talking machine, before the customer has a roof over his head.—The Petticrew Real Estate Co., Springfield, Ohio, by Stanley S. Petticrew, Secretary.

Space does not permit quoting more of these letters. One each has been selected from the many coming from different sources. But they show how enthusiastic men engaged in different business activities are over this movement.

How to Establish the Clubs

Establishing an "Own a Home Savings Club," or a "Farm Improvements Savings Club" is a simple matter.

The first step is to enlist the co-operation of a bank, the largest in the city or town, if possible, or, better still, two or more banks. The bank acts as the hub around which revolve the activities of the club.

To each member of the club the bank issues a pass book, and accepts the weekly or monthly deposit of the member. To these deposits are added interest at semi-annual or quarterly interest periods. The amount to be deposited weekly is



"WELCOME HOME, DADDY." The home owner is a man to be envied. The house he lives in is a real home, where dwells a happy family. Thru the "Own a Home Savings Club" plan every wage-earner or family with an income can have an "Own Home."

optional with the club member, and fixed according to the amount he needs as the first payment on his home, or building improvement, and on his ability.

There are two important features of this plan that must be emphasized. One is that the total amount to be saved be fixed upon. That gives the club member an objective. He then knows that by depositing a certain amount each week for a fixed number of weeks he will be in a position to have a home of his own. That point made the Liberty Loan sales successful and is the basis of the popularity of Christmas Savings Clubs.

The second point is that the bank must be willing to actively and enthusiastically promote the clubs and do the big share of the work of securing members. It is no secret that banks are willing to pay in cash to secure new depositors. They buy advertising space in newspapers to induce people to save; they employ solicitors to secure new depositors. They always are willing to push plans that will increase the number of their depositors and the amount of their deposits.

The Part the Building Industry Plays

Members of the building industry can help the banks in two ways. They can talk "Own a Home Savings Clubs" and "Farm Improvements Clubs" to their customers and friends. But most important of all they can assist the prospective home builder in fixing upon the amount he will need to make the first payment on the home he wants to build.

Too much emphasis cannot be laid on the point of giving the club member an objective, or the amount he will be required to save before he can start building.

The initiation fee in an "Own a Home Savings Club" is the DESIRE TO OWN A HOME.

The dues are whatever the member fixes as the amount he can save each week, or each month.

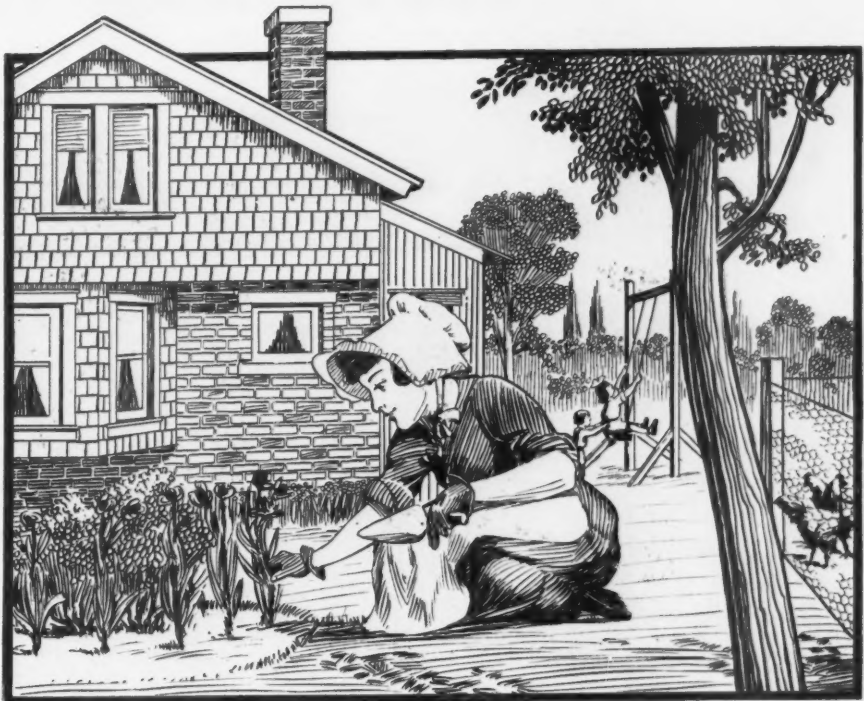
The benefit that each club member gets from his club is a HOME OF HIS OWN.

We all want our friends to have homes of their own, because we know that home owning will bring them satisfaction and comfort; it will bring happiness to their families, and financial prosperity to them.

We all want to promote building—that is our business.

The establishment of "Own a Home Savings Clubs" and "Farm Improvement Savings Clubs" will accomplish both of these most desirable results.

By co-operating with the AMERICAN BUILDER in



HEALTH AND HAPPINESS ARE FOUND IN THE HOME GARDEN. One of the joys of home owning is that it gives the members of the family a chance to "make garden." The women love to grow flowers, and find health in doing it; the men get healthful exercise and give battle to the high cost of living in the vegetable garden; the yard is the children's paradise.

urging the formation of "Own a Home Savings Clubs" and "Farm Improvement Savings Clubs" members of the building industry will create thousands of building prospects.

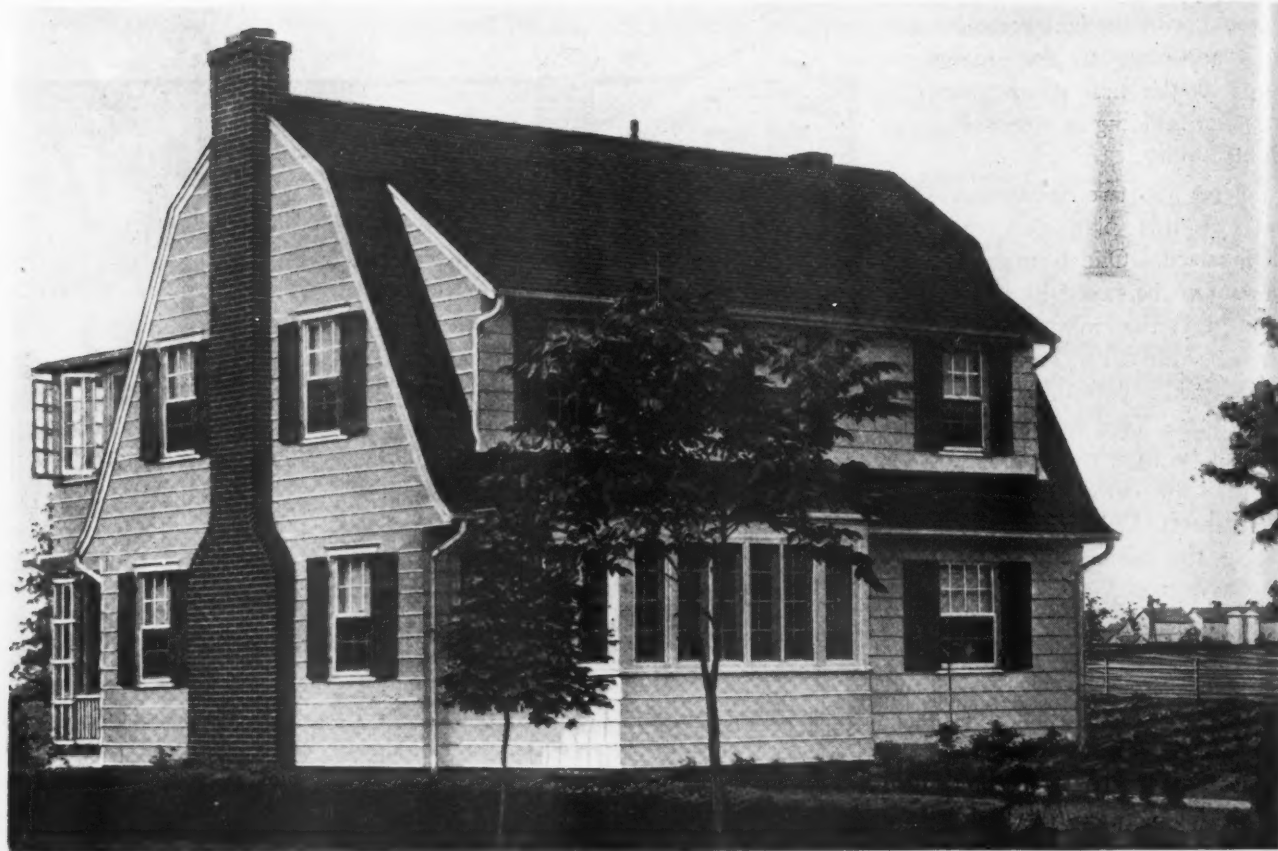


Urge Larger Appropriation for U. S. Forest Products Laboratory

The Forest Products Laboratory, of the United States Department of Agriculture, was established nine years ago at Madison, Wisconsin. The purpose of the Laboratory is to ascertain, by scientific and technical investigations, the various technical properties and possible uses of the different species of wood and to develop for the benefit of the public and the lumber and wood-using industries, the industrial uses to which the various woods may be best adapted.

The Laboratory is supported by Federal appropriation. During the war its activities were greatly increased and directed almost exclusively to war work. For this purpose its financial support came in large part from the War and Navy Departments. The immediate emergency having disappeared, support of the Laboratory through these special funds, has been largely withdrawn.

The appropriation authorized by Congress for the year beginning July 1, 1919, is no greater than the annual pre-war appropriation, viz.: \$175,260. Those engaged in wood using industries and familiar with the work of Laboratory, realize the great value of its activities and the services of almost incalculable value which it is prepared to render to those industries, as well as to the general public. Resolutions have repeatedly been adopted by groups of manufacturers endorsing the work referred to the Laboratory and urging the continuance and extension of its activities. But these have not been brought with sufficient force to the attention of Congressmen and Senators, asserts the Chicago Association of Commerce, which, with several other interested organizations is conducting a campaign to get an appropriation of \$500,000 annually for the Laboratory.



DUTCH COLONIAL HOUSE OF SIX ROOMS. This is not a large house, its dimensions being 34 by 24 feet, but it contains six good rooms, two of them exceptionally large, and sun parlor, private porch and a sleeping porch. It combines exterior beauty with interior comfort and convenience.

Six-Room, Modern Dutch Colonial House

SUN PARLOR, LARGE LIVING ROOM, AND SLEEPING PORCH MAKE THIS AN UP-TO-DATE HOME DESIGN

HOME builders like the Dutch Colonial. There is a "something" about its appearance that appeals to everyone. Aside from its exterior appearance, it has the excellent point of providing space for good-sized, well-arranged rooms, and at the same time have architectural beauty.

The Dutch Colonial house shown in the accompanying design is excellent, for it is an exceptionally good-looking house from the exterior, has plenty of rooms for the average family, and is economical to

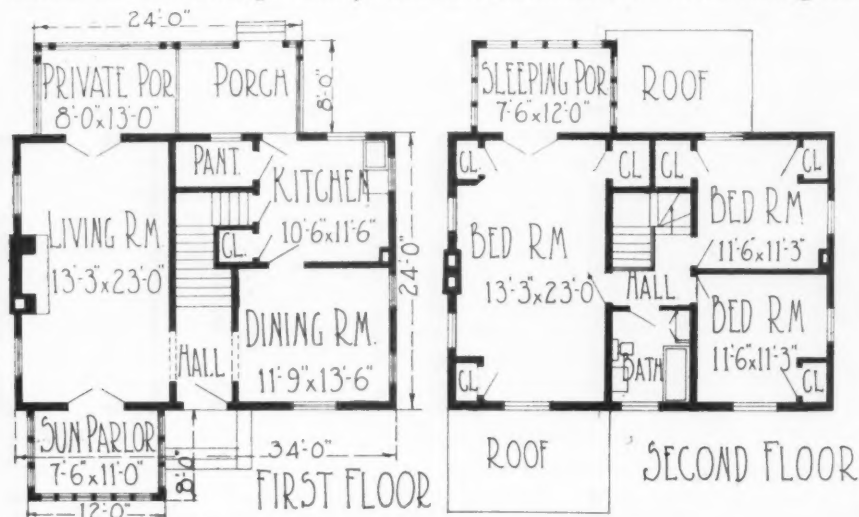
build. The dimensions of the house are only 34 by 24 feet, still it contains six good-sized rooms, a sun parlor, a private porch, and a sleeping porch on the second floor.

A central hall separates the living room from the dining room and kitchen. The living room is 13 feet 3 inches by 23 feet, and adjoining it at the front is the sun parlor, and at the back is a private porch 8 feet by 13 feet. On the other side of the hall at the front is the dining room, 11 feet 9 inches by 13 feet 6 inches.

At the rear of the dining room is the kitchen, 10 feet 6 inches by 11 feet 6 inches.

One of the three bedrooms on the second floor is the same size as the living room and has a sleeping porch adjoining, 7 feet 6 inches by 12 feet. The two smaller bedrooms are placed at the opposite corners, with the bath located conveniently to all the rooms.

The prospective home builder can examine a great many home building plans and not find such an attractive home, both from an exterior and interior viewpoint, as this Dutch Colonial.



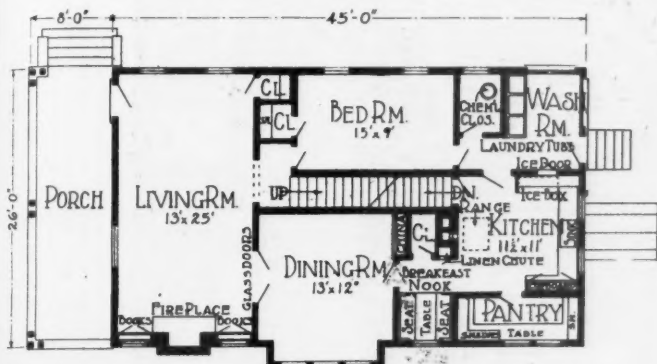
Floor Plans of Six-Room Dutch Colonial House. Size, 34 by 24 Feet.

Seven-Room, Story-and-a-Half House

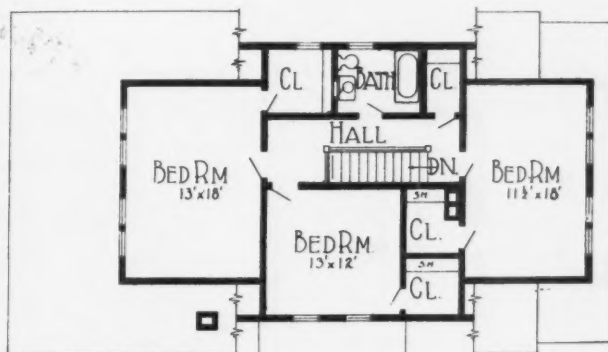
PRETTY HOME OF THE BUNGALOW TYPE CONTAINS THE MODERN COMFORT-GIVING FEATURES

IN discussing plans for the new home with members of the Own a Home Savings Clubs, the story-and-a-half bungalow type house will make a strong appeal to them. Such a home is shown in the accompanying illustration. It is a "homey" looking house and its exterior appearance gives an idea of how well

arranged are the seven rooms it contains. The dimensions of the house are 26 by 45 feet. It contains a large living room, dining room, kitchen, with breakfast nook adjoining, and four bedrooms, one on the first floor and three on the second. In size and number of rooms this house is just right for the average family.



FIRST FLOOR PLAN



SECOND FLOOR PLAN

Floor Plans for Seven-Room Story-and-a-Half House of the Bungalow Type.



AN IDEAL HOME FOR THE AVERAGE FAMILY. This seven-room house of the bungalow type of architecture contains seven rooms with all the modern features that are good in home construction. The house is of frame construction, and is 26 by 45 feet, suitable for a narrow lot. The broad porch and large living room make this a comfortable home in both summer and winter.



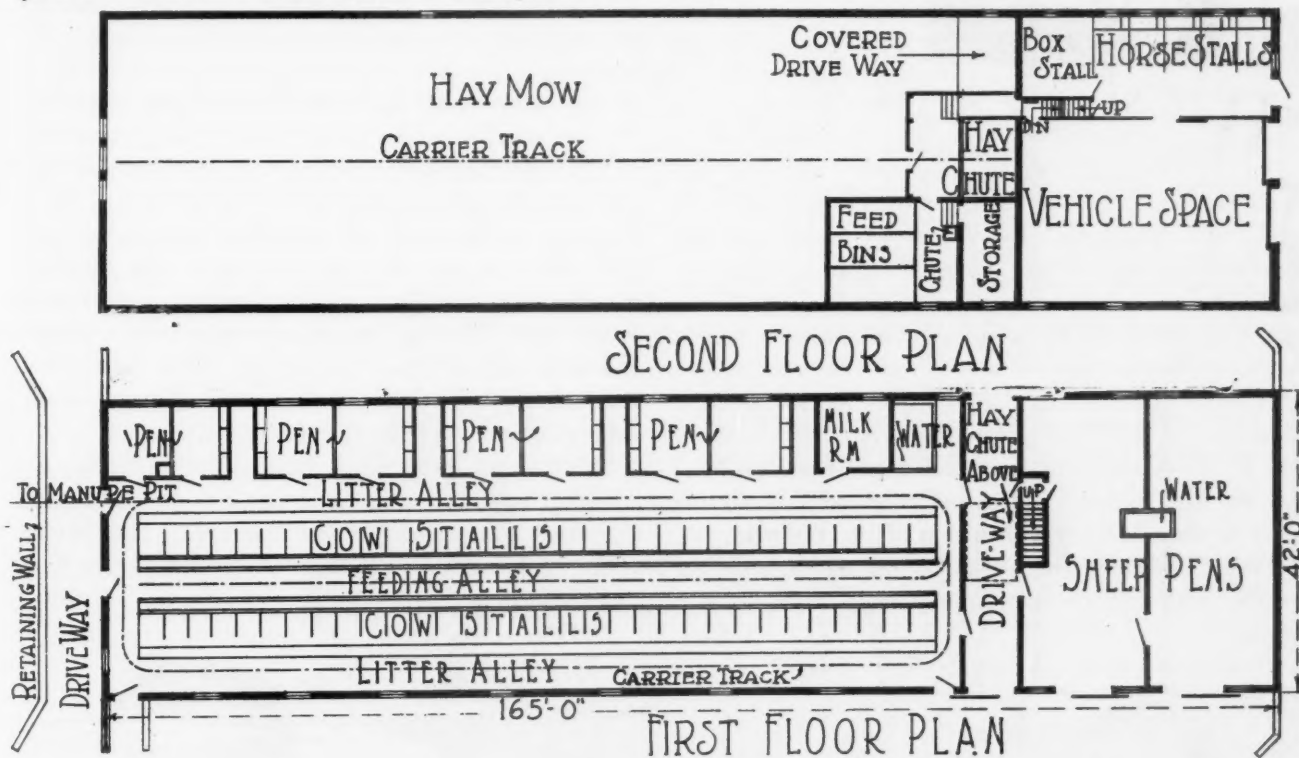
The Combination Dairy and Horse Barn, Erected at West Cornwall, Vt., by D. W. Ames, of Brattleboro, Vt., a Member of the American Builder Family. This Structure is 42 by 165 Feet, of Plank Frame Construction, Set on a Concrete Foundation. This Photograph Was Taken During the Course of Construction and Is an Excellent Example of This Method of Barn Framing. There Are Stalls for 64 Cows and Pens for Their Calves, a Bull Pen, Two Sheep Pens, 20 by 40 Feet, a Horse Stable and Vehicle Storage Space on the Mow Floor, and a Mow That Will Hold 225 Tons of Hay. About 115,000 Feet of Lumber Were Used in the Structure. A View of the Barn After It Was Finished and Floor Plans of the Building Furnished by Mr. Ames Are Shown on the Following Page.

Design for a Modern Dairy and Horse Barn

THIS BUILDING IS 42 BY 165 FEET, WILL ACCOMMODATE 64 COWS, A BULL, CALVES AND SIX HORSES. DESIGNED AND BUILT BY D. W. AMES, BRATTLEBORO, VT.

HERE is an extraordinary barn. It was designed and built by D. W. Ames, contractor and builder, Brattleboro, Vt. The building is 42 by 165 feet and required about 115,000 feet of lumber. It contains stalls for sixty-four cows, a bull pen and pens for the calves. Also there are two sheep pens, 20 by 40 feet. At one end of the mow floor there is a horse stable, with stalls for six animals, space for vehicles and feed bins. A unique feature

is the method of getting the hay to the mow. The accompanying floor plans will prove an interesting study for contractors who design and construct farm buildings. The barn is completely equipped with litter and feed carriers, modern stanchions, and there are drinking cups at the stall heads. A large silo will be added to the barn next year. Mr. Ames says that "the Vermonters are certainly building some good barns."



Dairy and Horse Barn at West Cornwall, Vt., Designed and Built by D. A. Ames, Contractor and Builder, Brattleboro, Vt. Above Are the Floor Plans for This Structure, 42 by 165 Feet. This Is a Most Unusual Barn and Presents an Interesting Study to Designers and Builders of Farm Buildings.



Fred Beard says:

"Everyone Who Joins Our 'Own a Home Savings Club' Will be Happy, for He Will Soon Have a Home of His Own."

"WE did nothing more than almost every young married couple who depend on a salary can do if they only have the will power to save; we put away a small amount each week, and now after two years of consistent and persistent saving we are going to have a home of our own. If more young people did the same thing, Mr. Ely, there would be a lot more happier people in the world."

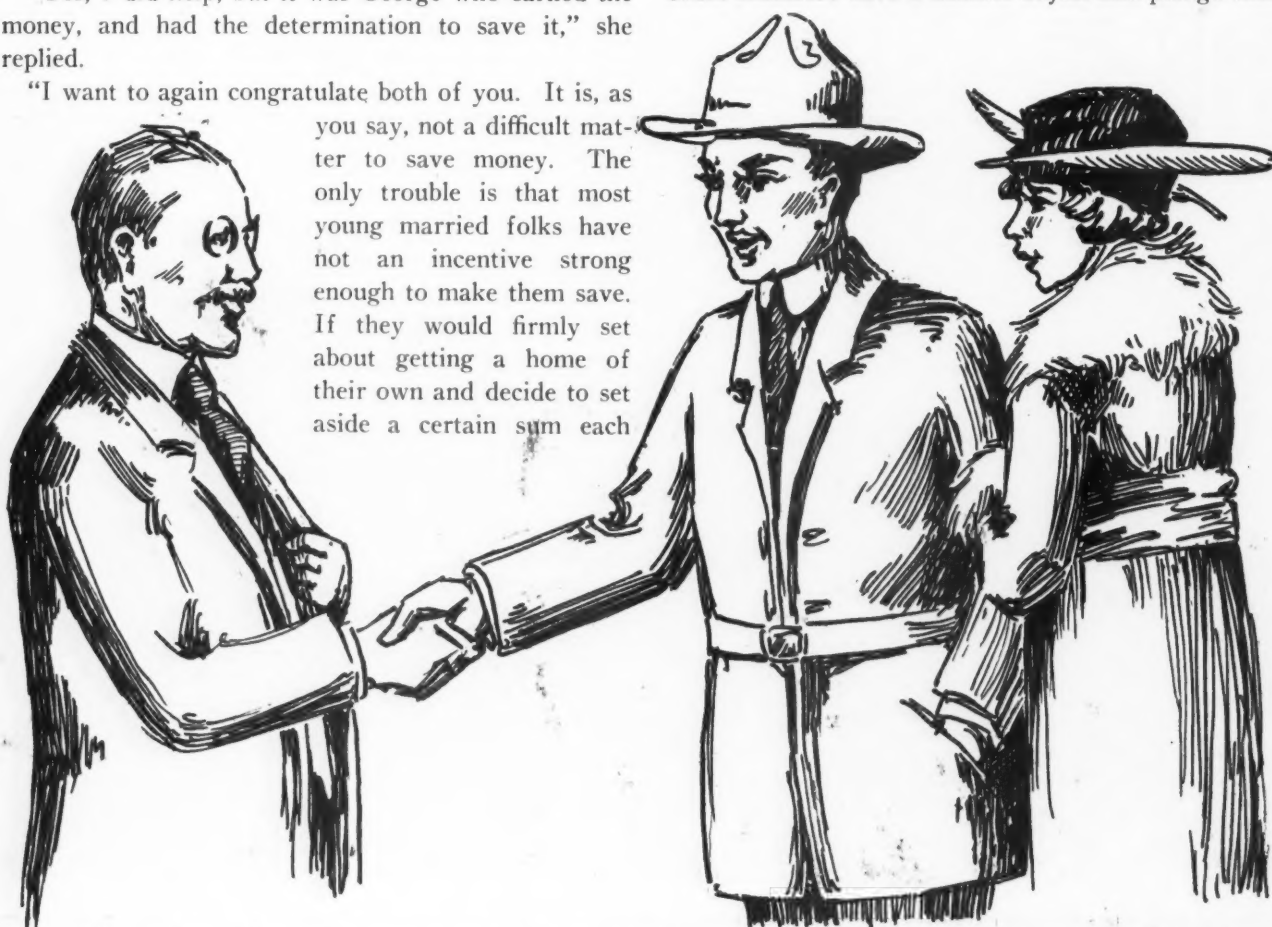
"You're right, young man," responded Samuel Ely, president of the First National Bank, "and I know that he owes much of his success to your support," the banker added, addressing the smiling young woman, whose arm was thru that of her husband.

"Yes, I did help, but it was George who earned the money, and had the determination to save it," she replied.

"I want to again congratulate both of you. It is, as you say, not a difficult matter to save money. The only trouble is that most young married folks have not an incentive strong enough to make them save. If they would firmly set about getting a home of their own and decide to set aside a certain sum each

payday, they would be as successful as you have been. But the trouble is they don't do it. Every man takes out life insurance when he gets married; some of them have forethought enough to secure a policy before they are married; and the premiums always are paid. The reason is that life insurance is a debt that they have to meet, and they meet it. But a savings account is different. Saving depends on their own initiative, and there are so many things they would rather have than money in the bank, that it is difficult for the average person to save just to have a surplus.

"Having an incentive to save," continued Mr. Ely, "is what has made the Christmas Savings Clubs such a success everywhere in the country. The Savings Clubs members have a definite object and pledge them-



"By Saving, You Two Young People Have Secured More Than the Money to Build Your Home; You Have Earned Your Banker's Confidence," the Banker Told the Home Builders.

selves to save so much each week. You would be surprised to know what a large percentage of those who begin to save for Christmas keep faith with themselves, and when Christmas comes around they have a considerable sum of money. The only trouble is that after a year of effort a great majority take their savings and spend the money in ways that—well, not exactly frivolous, perhaps, but it doesn't seem to me they get as good a return as they might for their effort.

"That is why I was so interested in your home building project. You undoubtedly did not know it, but I have been watching the result of your systematic saving. I heard what your object was when you started. And I want to say to you two young people that you have secured more than the money to make the first payment on your home; you have earned your banker's confidence; and when the time comes you can count on this bank to do anything it consistently can to help you in a financial way.

"Thank you, very much, Mr. Ely," said the young couple, as they shook hands with the banker.

While he had tried not to "eavesdrop" on the conversation between the banker and the two young people, Fred Beard had heard the conversation that had taken place just outside the banker's office. And as the two left the banker, the hardware dealer stepped forward.

"I couldn't help but hear what you were saying to those young people, Mr. Ely," said Beard, in greeting the banker. "And it is right in line with a suggestion I

was reading today in the current issue of the AMERICAN BUILDER. Sam Williams, the contractor, and Ed Maple, the lumber dealer, called my attention to it. Have you heard of the AMERICAN BUILDER'S 'Own a Home Savings Club' plan?"

"No, I haven't," replied Mr. Ely, "but any plan that has the word 'savings' connected with it interests me. Likewise the word 'home.' I returned only a few days ago from the annual meeting of the American Bankers' Association, at St. Louis, where I heard Mr. George M. Reynolds, president of the Continental and Commercial National Bank, of Chicago, the second largest banking institution in America, tell the several hundred bankers assembled there that they ought to do all they can to promote home building, as home-owning is the greatest cure for bolshevism. So, you can readily understand, Mr. Beard, that I am doubly interested in the idea you have just brought to

my attention. What are these 'Home Savings Clubs'?"

"A 'Home Savings Club,' Mr. Ely, is just exactly what you told that young couple the people need to get them to save money, to own a home of their own. It requires consistent saving, but its greatest merit is that it provides an incentive, as you expressed it, for people to save.

"I have read about the plan and Sam, and Ed and I have sent in our applications for membership in the club. And in our application we agreed, as members, to do everything in our power to help get other members for the 'Own a Home Savings Club' we expect to organize in our city. And we want you to join, for it will be to your interest to see that a club with a large membership is established. Besides you, or your bank, rather, will benefit by it. Think of what it will mean to get, say, 50 or 100, or even more families to set aside a certain amount of money each week, or month, and deposit it in your bank. What we need is the co-operation of you and your bank, and together we will make our 'Own a Home Savings Club' a big success."

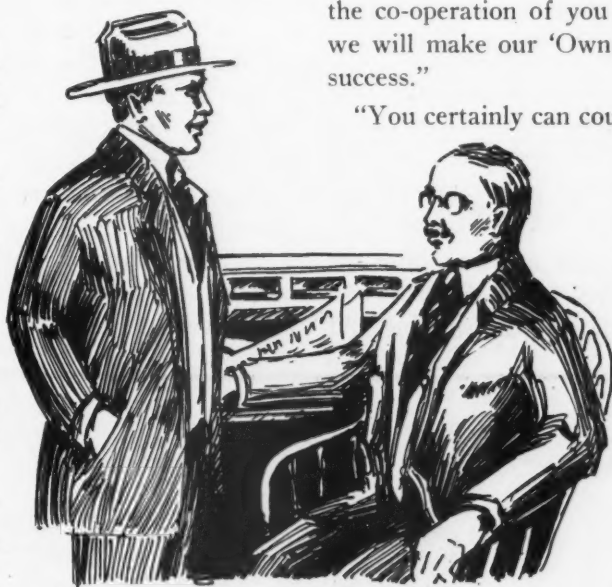
"You certainly can count on me, and I know that the directors of the First National Bank will back me up in this matter. As soon as you get your membership and are in a position to explain the plan fully I will be glad to hear the details myself, and I will see to it that the directors get together and hear you, too."

"That's what I would like to do—tell your directors about this plan to promote home building in our city. Think what it will mean not only to us who are interested

in building and to your bank, which wants to get new depositors, but to the people themselves. You and I know many men in this place who are living in rented houses, who ought to have their own homes. The trouble is they have never determined that they will have a home of their own. But get them into a club and see how quickly they will become enthusiastic.

"Your enthusiasm is contagious, Mr. Beard," responded the banker. "I am beginning to get worked up over this idea, too. We have just seen a concrete example of the happiness that comes to those who sacrifice for a home in those two young people who just left here. Did you notice the happiness and the satisfaction in their achievement that was expressed on their faces?"

"Everyone who joins our 'Own a Home Savings Club' will be happy, for he will soon have a home of his own."



"I Want to Tell You About the 'Own a Home Savings Club Plan,' Said Fred Beard to the Banker.

Woman Gives Some Tips to Builders

HOUSEHOLD EFFICIENCY EXPERT MAKES PLEA FOR CONVENIENT KITCHENS

IN a newspaper article on "The Servantless House," Mrs. Christine Frederick, designated as "The distinguished authority of household efficiency," gives home builders some suggestions that will be of interest to members of the building industry. Mrs. Frederick's article, in part, follows:

"It is fortunate that women are coming into the architectural field, for surely women who live in a home 90 per cent of the time must know its work problems more than the man, who is home only at breakfast and dinner. As I have often laughingly said, no architect who ever planned a kitchen would ever wash dishes in it himself for a single week without going on strike! The reason our kitchens and other parts of the house have been so inconvenient heretofore is because they have been built by men who drew them on paper, but never worked in them in daily life.

"The efficiency experts tell us that good work must be 'routed.' This means that we must pass from one step to another with the least possible waste motion and effort. Whole factories are now built so that raw material entering at one end goes straight thru coming out a finished product at the other end.

"But take the average kitchen and see how the woman must dance backward and forward, across and about before she can serve a meal. In sweeping and

dusting she must go from closet to door, thru hall and across and back, wasting effort and time.

"It is impossible in so short an article to handle adequately so big a subject, but it suffices to say that the servantless house of the future must be built along the following lines:

"Main equipment of sink, stove, table so arranged to permit routed work.

"Exits and entrances of rooms with least waste space and opportunity for dust catching.

"Composition flooring, with the foot baseboards, to make easy mopping, prevent cracks, etc.

"No waste space in high closets, no useless shelves or cubby holes.

"Sanitary coverings, washable and easy to keep clean, such as painted walls, metal top tables, etc.

"Chutes, ash traps, incinerators, etc., for easy disposal of dust, waste and garbage.

"The smaller, the more compact and the better arranged the space the easier work in the house will be. The more built-in furniture the better. This means fewer movables to clean under and fewer furnishings to move from place to place, as well as a more artistic whole.

"We need architectural and household efficiency experts to design homes which are at once comfortable, attractive and step-saving.



The Built-In Cases and the Kitchen Equipment Should be so Placed as to Make the Work Easy and to Save the Steps of the Housekeeper.

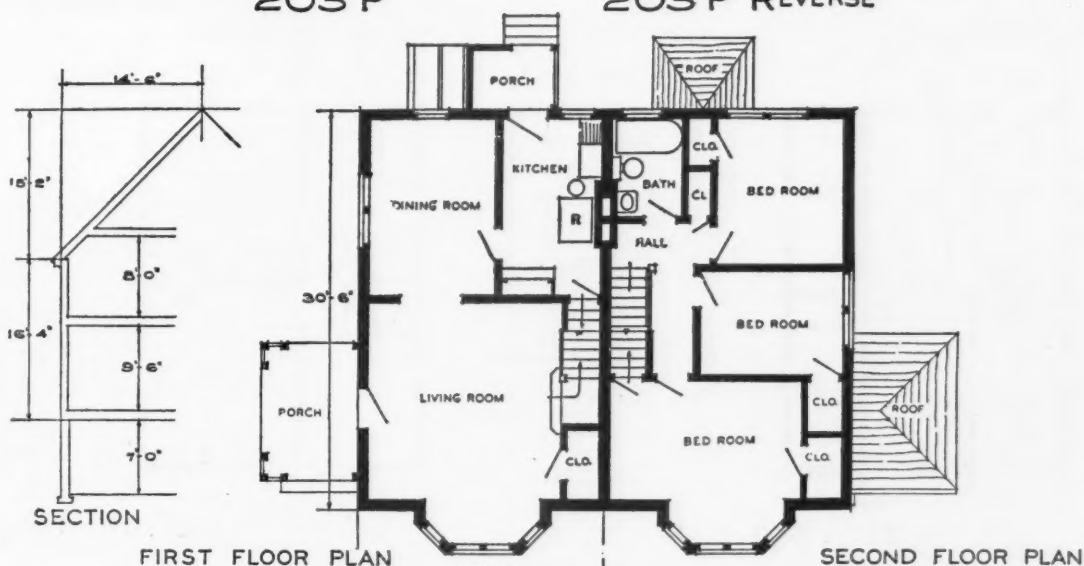
Design for Home Savings Club Members

SIX-ROOM SEMI-DETACHED HOUSES OF STUCCO OVER HOLLOW BUILDING TILE



203 P

203 P REVERSE



SIX ROOM SEMI-DETACHED HOUSES TYPES 203 P

SCALE 5 10 15 20 25 FEET

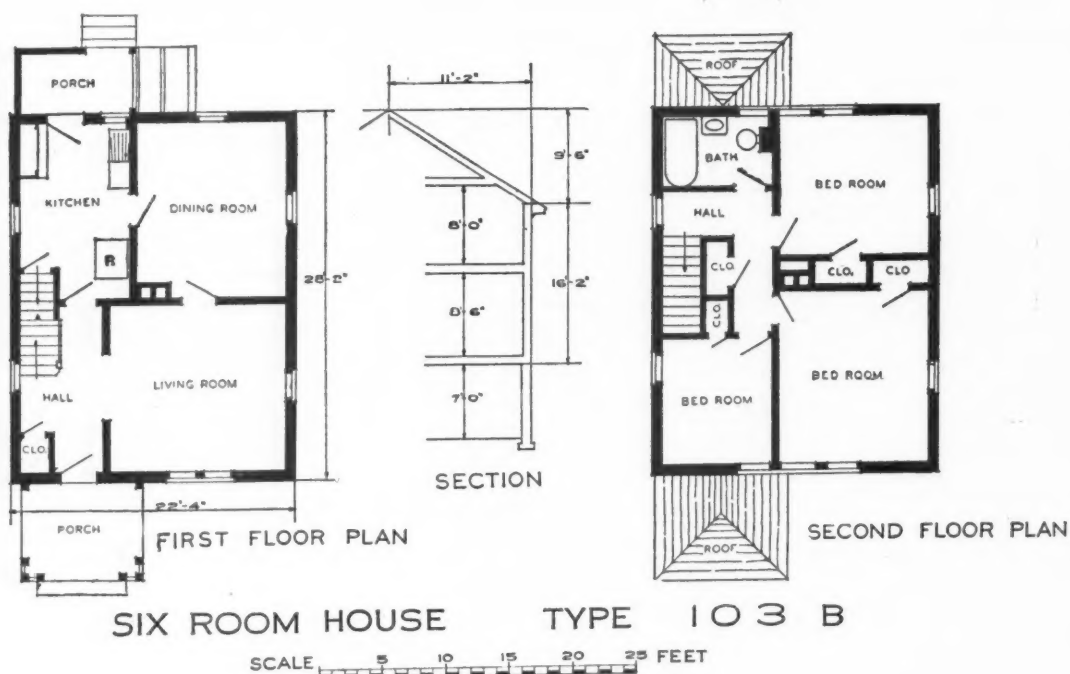
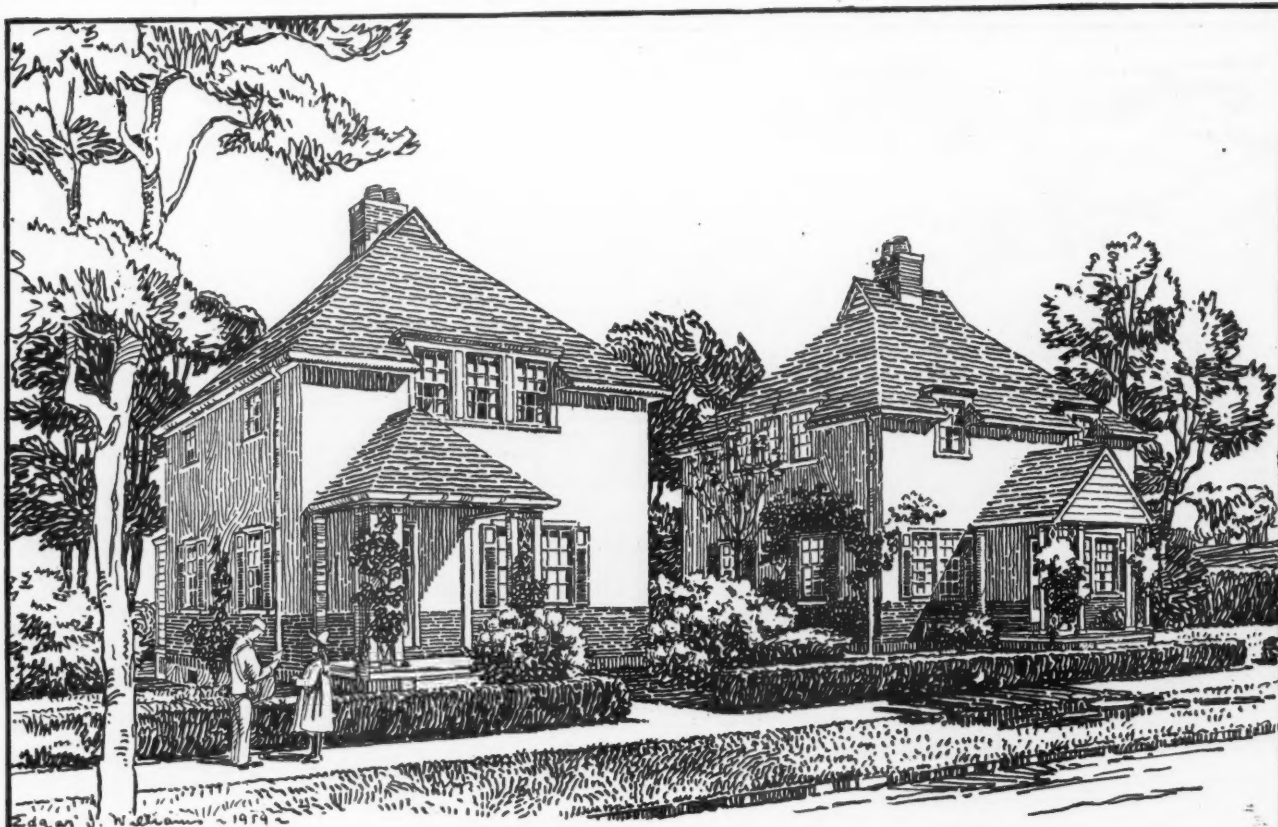
SIX-ROOM SEMI-DETACHED HOUSE OF STUCCO OVER EIGHT-INCH HOLLOW TILE

This is one of the many designs used by the U. S. Housing Corporation in its industrial housing projects. The dimensions of each house are 19 feet 2 inches by 30 feet 6 inches. The criticism made of this design was that the porches project too much, obscuring the beauties of the houses. Living room, dining room, kitchen, three bedrooms and bath are provided in these houses, which were designed by Albert H. Spahr, architect. The aim of the housing corporation was to use the most available materials. The houses shown were erected at Erie, Pa., others were of veneered common brick, special hollow brick, furred inside, and of stucco over eight-inch tile. All the

houses have slate roofs. The aim of the architect was to supply the best looking house possible for the amount it cost, using materials most easily obtained. It was on this basis that the Housing Corporation selected the designs used in its building projects, so this may be taken as a good example of attractiveness, comfort and convenience at a low cost, three things present-day home builders are seeking. While this standard floor plan was used, the exteriors of the houses, when built on the same street, were changed somewhat to give variety. This variety was obtained by altering the roof designs and by putting the porches and entrance doors at different points.

Design for Home Savings Club Members

SIX-ROOM HOUSE OF STUCCO OVER HOLLOW BUILDING TILE



SIX-ROOM HOUSE OF STUCCO OVER EIGHT-INCH HOLLOW TILE.

Another type of house erected at Erie, Pa., by U. S. Housing Corporation. By comparing this design with the one shown on page 80, it will be seen that the same floor plan was used, but a different exterior. This house is 22 feet 4 inches by 28 feet 2 inches. By transposing the porches and changing the roof lines in adjoining houses a good variety was secured. The architect was Albert H. Spahr. The aim of the architect was to get the most for the money in space and convenient arrangement, as well as to make the houses attractive, and this design is pointed to as an excellent

example of the attainment of this object. While this is a small house, comparatively, it contains six good rooms, as no space has been wasted. The walls are all straight, making the construction cost economical. But the houses are attractive, with the possible exception of the high roofs of the porches, which the editor of the Housing Committee Report says appear too large and cover too much of the front wall. However, it is a simple matter to secure variety in the same house design, and this is well shown by the prospectives.

Getting Heat Out of Smoke

UNUSUAL METHOD OF CHIMNEY CONSTRUCTION TO CONSERVE FUEL

By Paul Llewellyn Fetherston

ABOUT 20 per cent of the heat energy produced by the burning of a ton of coal in the average residence heating system is carried out the smoke flue.

In these days of scarce and high priced fuel a method for making use of this heat will meet with favorable consideration.

The combined smoke and air flue illustrated here-with has many favorable features. The first cost is but slightly greater than that of the ordinary single purpose smoke flue; and it is designed to get the maximum amount of heat out of the escaping smoke. As will be seen the cold air enters at the top and absorbs the heat from the smoke as it is drawn down toward the furnace.

Two Metal Smoke Pipes

A pair of metal pipes should be used to carry the smoke, for the reason that heat will readily pass thru them. A single large pipe would be slightly easier to install but less efficient, because of the fact the radiation surface would not be so great.

These pipes should be made of fairly heavy sheet iron, at least twice as thick as that used in ordinary stove pipe and preferably galvanized.

The pipe is assembled and the brick laid up around it, care being taken to join the lengths properly.

The part which projects above the roof is designed to admit the air and at the same time keep out the rain and snow.

Aside from saving coal this form of flue will lower the insurance rate, as there is no possibility of the house being set afire by an overheated flue.

EDITOR'S NOTE: What do our readers think of this idea? Has it ever been tried? What are the objections?

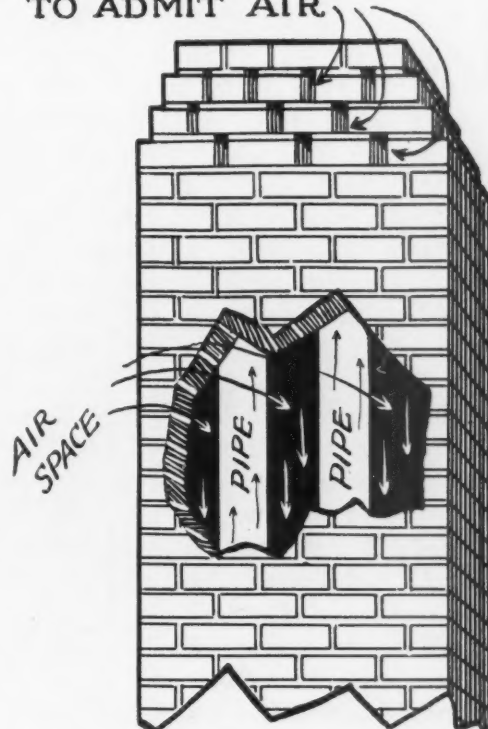


CONTRACTORS who build for farmers have been surprised this year by the quality of homes that the farmers want. For many years the farmers' families were placed second to the livestock. Now the families are coming into their own and are getting homes that are even better than those erected in cities, and are equipped with all the conveniences, such as water and electric lights.



PRACTICALLY every operation about the construction of a building has been standardized. But every now and then an ingenious member of the building industry discovers a method that is more simple than the one generally used. When this new method becomes generally known, it becomes the standard. Keeping on the lookout for a simple and easy method of doing a piece of work means advancement for the discoverer.

SPACES BETWEEN BRICK TO ADMIT AIR



Suggested Chimney Arrangement to Pull in the Cold Air for the Furnace Alongside the Heated Smoke Pipes, Thus Absorbing Part of the Customary 20 Per Cent Heat Loss Up the Chimney.

"This Is the Home That I Am Going to Build"

MEMBERS OF THE AMERICAN BUILDER STAFF HAVE JOINED AN "OWN A HOME SAVINGS CLUB," AND ARE BUSY PLANNING THEIR HOMES. IN THE BLUE-PRINT SUPPLEMENT ARE PLANS FOR ONE OF THESE HOMES—WHAT DO YOU THINK OF IT?

By J. D. Eddy

MEMBERS of the AMERICAN BUILDER staff are all "het up," and the home of the AMERICAN BUILDER Staff, here at 1827 Prairie Avenue, might be termed a hospital filled with patients who have finally decided to be operated on for a disease that could be called "Rentitis." For many years the men who produce the AMERICAN BUILDER have been akin to the shoeless children of the shoemaker, or the patched-pants offspring of the tailor. They have been urging that everyone build a home, and have helped thousands to build, but they have never taken their own medicine.

Now, however, there has been perfected a panacea of "Rentitis" that is easy to assimilate, like a sugar-coated pill, and everyone is clamoring for a chance to take the cure. The pleasant-to-take medicine is the "Own a Home Savings Club," and if the enthusiasm stays at its present temperature—and it is safe to predict that it will—there will be six or seven good building jobs for members of the AMERICAN BUILDER Family around Chicago next spring.

No one of the many ideas for the promotion of building that have come from Mr. Radford's busy brain has taken such an intimate hold on his associates as the "Own a Home Savings Club" plan. Providing, as it does, a simple and efficient method of building a

What Would You Put Into this Model Home?

If you were to build a model home what materials would you use and what equipment would you install?

Readers of the American Builder are invited to help plan the homes that the "Own a Home Savings Club" members will build.

Write and tell The Editor what you would use and why you would use it.

This is an invitation to everyone—advertisers as well as subscribers—no one is barred.

can build a home according to their own ideas of what a home should be and how it should be equipped, and let it be said emphatically that those ideas are numerous. Every modern building method and every device that has been invented to make a home more convenient and more comfortable has been studied by these men in the course of their daily work, and it is surprising how they have brought this knowledge to bear on the plans of the homes they expect to build. The

chief draftsman of our architectural department will substantiate that statement, but it would not be well to quote him—the postoffice officials might object.

It has been no uncommon thing in this office to hear "If I were to build a home I would—" and so on. Now they have had a chance to incorporate their ideas in the design of a home that will be built. Each one of these prospective home builders believes that his ideas are best, and has insisted that the AMERICAN BUILDER publish his plan to show the other mem-

bers of the family just how a home should look, how its rooms should be arranged, and how it should be equipped. So, the Editor is going to give the readers of the AMERICAN BUILDER a chance to see these plans, and, incidentally invites an expression of views on them.

The Home That Our Mr. X Expects to Build

This month we call your attention to the plan that has been made at the direction and under the personal supervision of—of—Mr. X., let us call him. By way of introducing Mr. X., it might be well to say that he is married, has three small children, two boys and a girl, and an automobile. So he is going to build a house that will be a real home for two adults, three children and one automobile. He now lives in a six-room apartment that costs \$65 a month, and the automobile spends its nights in a garage that requires an additional outlay of \$16 every thirty days. So he has \$81 a month, or \$972 a year, with which to pay interest, buy coal and satisfy the tax collector and the insurance agent before he will be anything out in a financial way on his home building project.

The home he is going to build is a dandy. We have his word for that; and we also have his reasons for planning this house as he has. How it is going to look from the exterior is shown by the perspective, while the plans for the house itself are contained in the blue-print supplement.



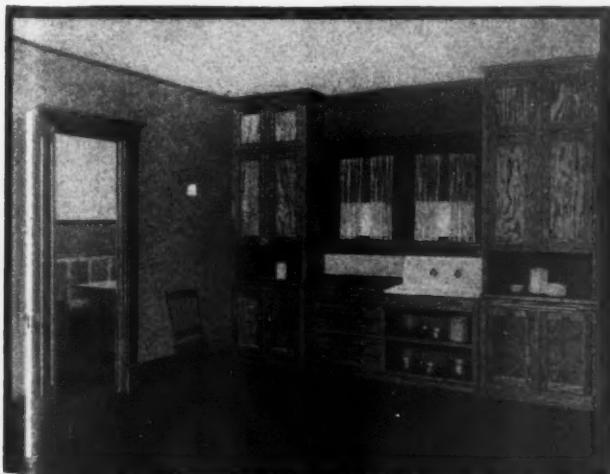
A Shallow Closet, with Built-In Shelves and Drawers Provides Storage Space for the Table Linens.

Mr. X. has told the fine points about this design so many times that no attempt will be made to quote his exact words. But the ideas hereinafter expressed are his. So here goes:

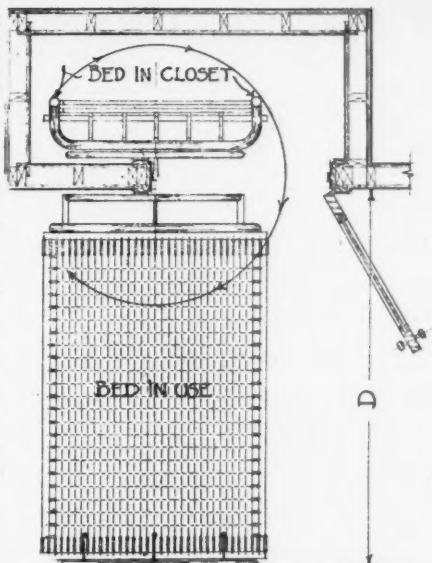
The Roof Treatment Unusual

Real estate in Chicago is expensive. For that reason the lot has a frontage of only 50 feet. The house, with the garage on one side and the side entrance porch on the other, will cover a total of 43 feet. By turning to page 4 of the blue-print portfolio, we find a front elevation of the house itself and the garage. To conform with the Chicago building regulations, the materials to be used are brick and concrete with terra cotta trim. An unusual feature, which is used as a matter of economy, is that the house has a flat roof, with a pitch of $\frac{1}{4}$ inch to the foot. The fire wall extends up 2 feet and is made attractive by the use of terra cotta in the coping. The detail of the terra cotta is shown on the elevation, and sections of the fire wall are contained in this page. The roofing material is fire-resistant composition.

The sun parlor, placed in the center of the house on the first floor, relieves what would have been the flat appearance on the front of this home. The entrance porch has brick pillars and concrete floor and steps.



A Built-In Kitchen Cabinet Makes the Kitchen Work Easy. Note How Windows Have Been Placed Over the Sink, with the Cases for Dishes Within Arm's Reach. A Glimpse of the Breakfast Nook Also Is Given.



Space-Saving Beds Are in Every Bedroom, Making Them Useful as Sitting or Sewing Rooms in the Daytime. The Drawing Shows How the Beds Operate.

No "Slacker" Rooms in This House

However, it is to the interior arrangement and equipment that Mr. X. points with justifiable pride, for every room in the house is designed to give the maximum of service.

There will be no slacker rooms in this house, and the eight-hour day as far as they are concerned is a figment of the imagination.

Of the regulation "rooms," there are only seven. But there really are nine, counting the sun parlor and the room over the garage. Let us take, with our eyes fixed on the blue-print pages, a walk thru the house and make a survey of the different rooms and their equipment.



The Electric Washer Installed in the Basement Laundry Makes Monday a Day No Longer to Be Dreaded.



There Is No "Ironing Day" in the Model Home. An Electrically Operated Mangle Irons the Flat Pieces Quickly and Well.

that admit plenty of sunshine and fresh air.

Returning to the hall and passing thru it we enter the dining room, which is of exceptionally good size, 12 feet 6 inches by 17 feet 6 inches. At the rear of the dining room there is a terrace which provides an ideal outdoor dining place in summer. French doors connect it with the dining room.

Ultra-Modern Equipment for the Kitchen

In the kitchen we begin to find features that are out of the ordinary. This room is not large, 9 by 14 feet 6 inches, but it is equipped in the most modern way. The table and sink are under a broad steel window—daylight factory style—with sash hung on a central pivot. In the glass of an upper corner is set a suction ventilator, electrically operated. The range



An Electrically Operated Ventilator Set in the Glass of the Kitchen Window Sucks Out the Cooking Odors and Keeps the Air in the Room Fresh.

is within easy reach of the work table. Adjacent to the sink at the rear is a wall case, and opposite it is an electric refrigerator. This last feature may be considered an extravagance, but when it is considered that it can be operated for 10 cents a day and will provide a uniform temperature in which to keep the family food, it will pay for itself within a few years, besides being more sanitary and many times more efficient than the iced refrigerator, as usually built. A second wall case, in the entry to the dining room, gives more storage place for dishes. Opposite the case is a breakfast nook, where the children may have their breakfasts and luncheons, and the lighter meals be served.

Small Closets of Large Capacity

Those familiar with plans will note that a dotted line has been drawn thru the center of the closet in

the hall. This line indicates that the closet is to be provided with a modern telescopic track on which is hung clothes hangers. Thirty garments can be hung in a space 28 inches deep and 28 inches wide by the use of this fixture, which is exceedingly inexpensive. Beside the saving in space, the clothes are kept better, need less pressing, and are protected from dust. Also there is little space to become a "catch-all" for clothes. At the top of the closet is a shelf for hats, and below a drawer for shoes. All of the clothes closets in the house have been designed to accommodate this equipment.

A glance upstairs from the first-floor hall brings to view a large room, fitted with glazed doors. This room is over the garage, and is designed for a playroom for the children. It is 11 feet 9 inches by 19 feet 6 inches and can be shut off from the balance of the house, giving the children a "home of their own."

Space-Saving Beds in All Bedrooms

Aside from the children's playroom, there are four bedrooms upstairs, all equipped with space-saving beds and with the small wardrobe closets of big capacity such as the one in the entrance hall downstairs. In two of the bedrooms, twin, space-saving beds are specified. Thru the use of these beds, every bedroom is

(Continued to page 140.)



SEVEN-ROOM HOUSE OF BRICK WITH TERRA COTTA TRIM. This is the home that "Mr. X." of the American Builder Staff intends to build thru his membership in an "Own a Home Savings Club." It is an unusual house in that a majority of the modern ideas of economical construction and convenience and comfort-giving equipment have been incorporated in the plans.

PLANS FOR THIS HOUSE ARE CONTAINED IN THE BLUE-PRINTED SUPPLEMENT THAT FOLLOWS.

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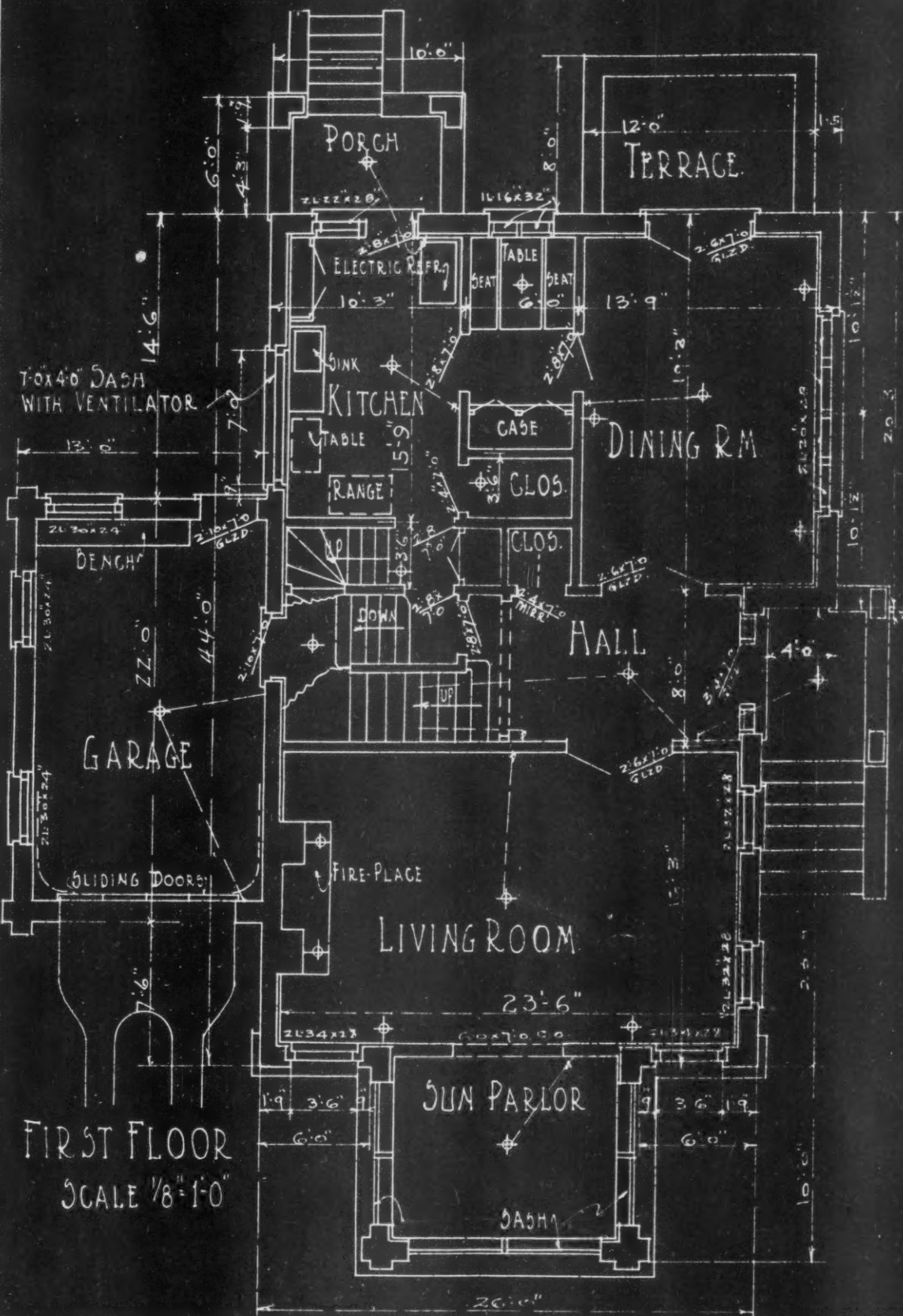
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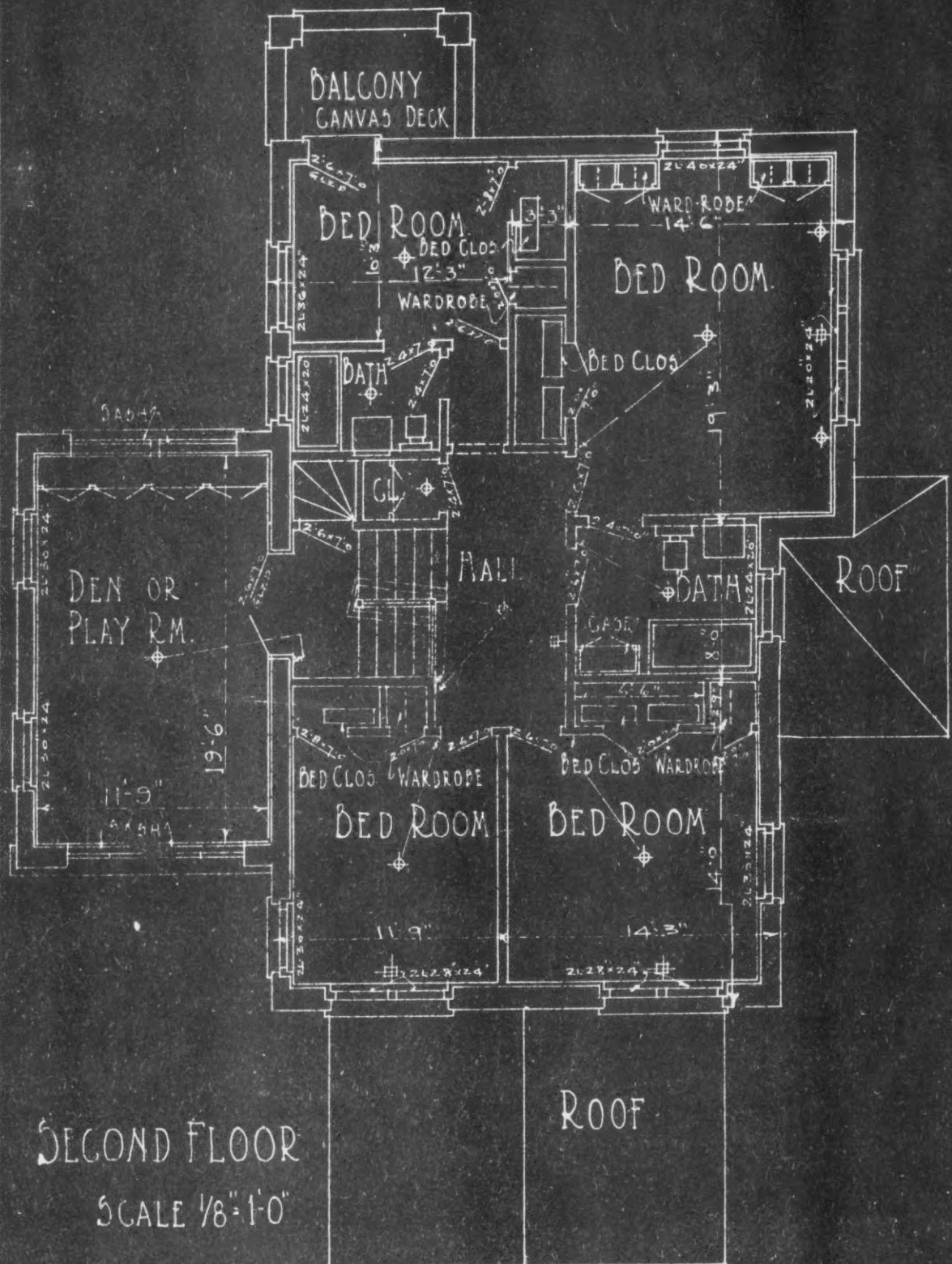
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AMERICAN BUILDER BUILDING PLANS



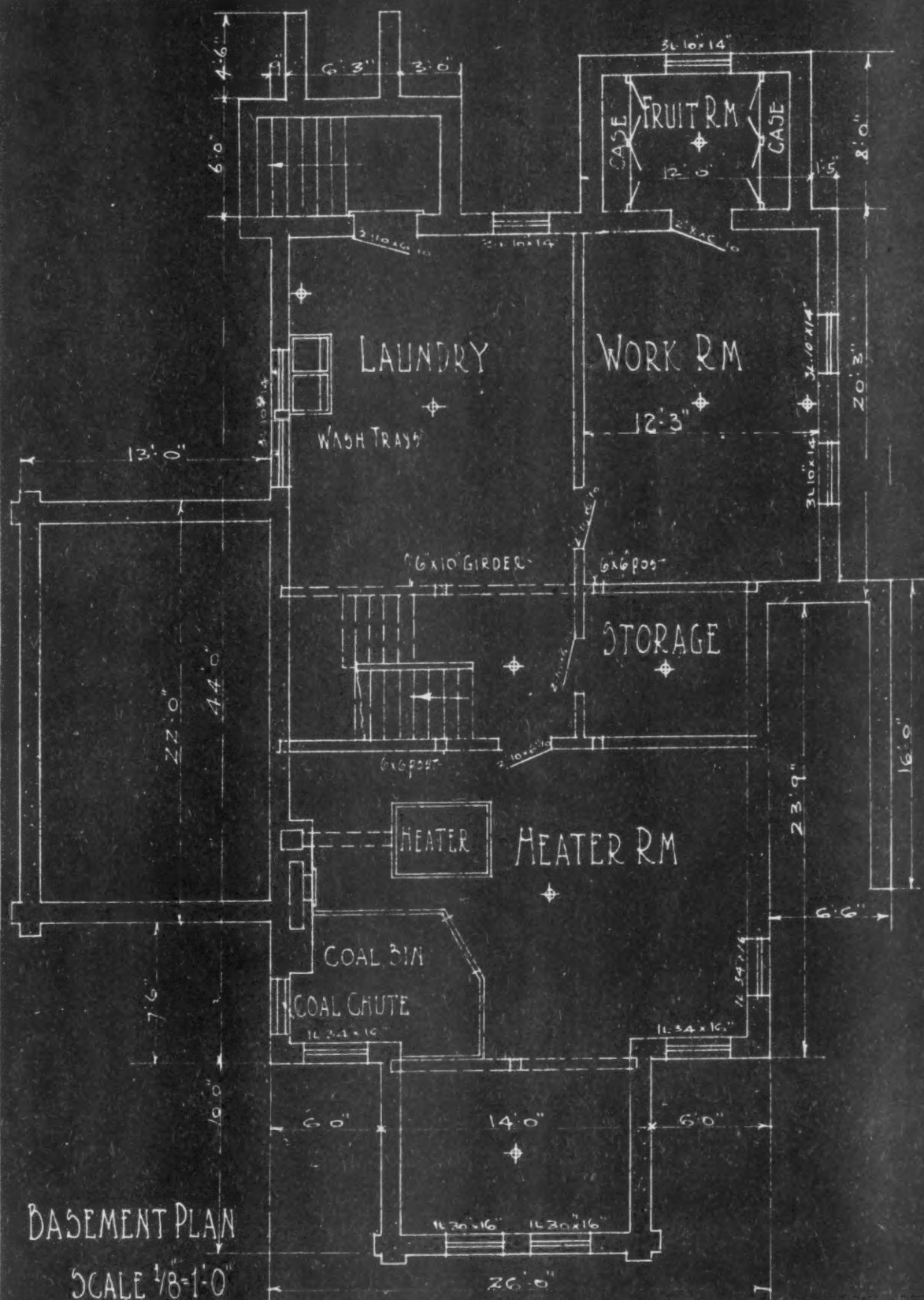
RESIDENCE WITH GARAGE SHEET N^o 1

AMERICAN BUILDER BUILDING PLANS



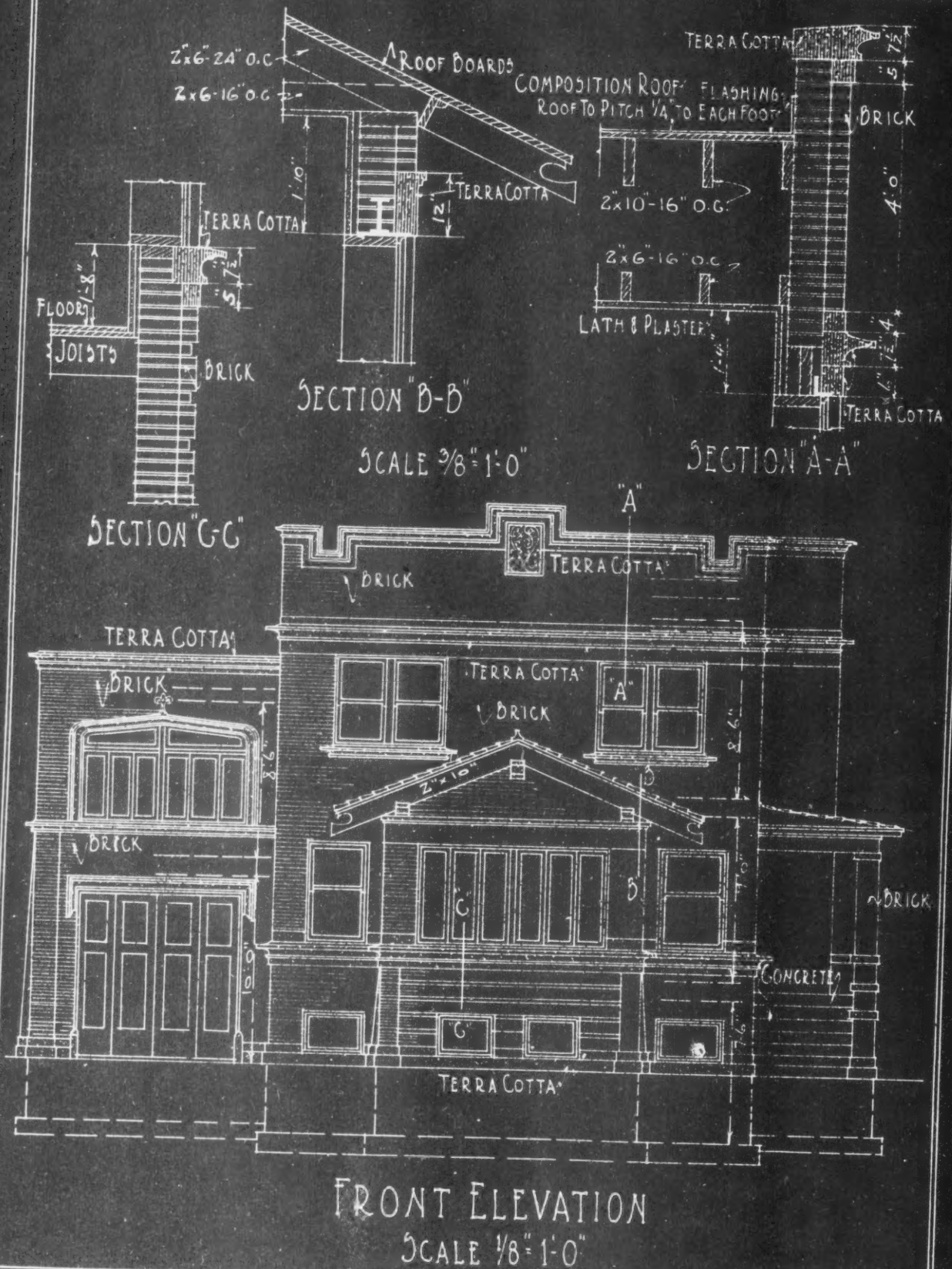
RESIDENCE WITH GARAGE SHEET N° 2

AMERICAN BUILDER BUILDING PLANS



RESIDENCE WITH GARAGE SHEET N° 3

AMERICAN BUILDER BUILDING PLANS



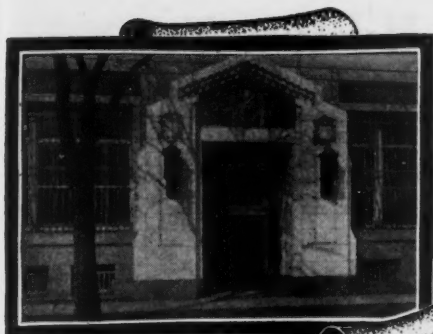
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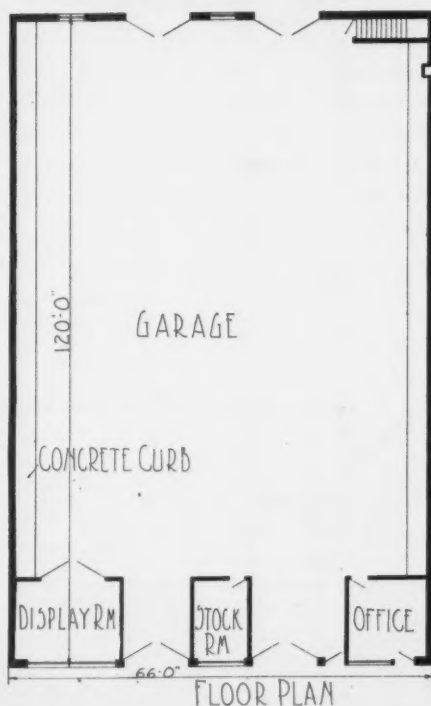


Design for a Public Garage

ATTRACTIVE BUILDING OF BRICK AND TERRA COTTA FOR THE STORAGE AND SALE OF AUTOMOBILES AND ACCESSORIES

THE rapid increase in the number of automobiles and trucks in use has created an unusual demand for the construction of public garages. Automobile manufacturers say that they are way behind in their orders, and by next spring the automobile and truck housing facilities will be far from adequate.

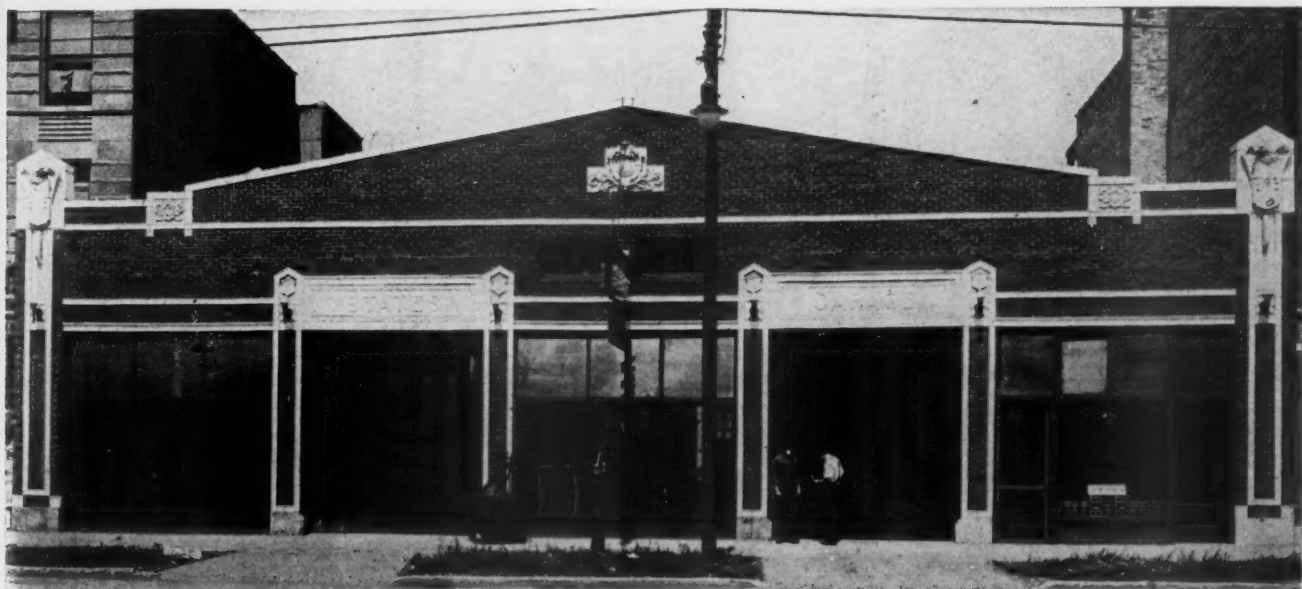
Contractors during the winter and next spring will be called upon to meet this need for garage buildings. The public garage is not a difficult building to erect, but there are some elemental features about it that should always be borne in mind. In the first place, the building should be as near fireproof as possible. The only inflammable materials generally used in garage construction is in the roof trusses.



Floor Plan of Public Garage, 66 by 120 Feet.

However, many public garage owners are willing and prefer to pay the price for steel trusses. The building itself usually is of reinforced concrete, veneered with face brick, on the front at least. By combining face brick with terra cotta, some attractive exteriors are secured.

Here is a design for a public garage 66 by 120 feet. It is of reinforced concrete, veneered with face brick and trimmed with terra cotta. The floor plan shows how the space at the front of the building is utilized for an office, a stock room and for a display room for accessories. There are two entrances, for the convenience of incoming and outgoing automobiles. Around the interior is a concrete curb to prevent the automobiles from damaging themselves.



Perspective of a Public Garage, of Concrete, Face Brick and Terra Cotta. The Building Is 66 by 120 Feet in Dimensions and Provides Storage Space for a Number of Cars. An Office, Display Room for Accessories and a Stock Room Are Located at the Front of the Building.

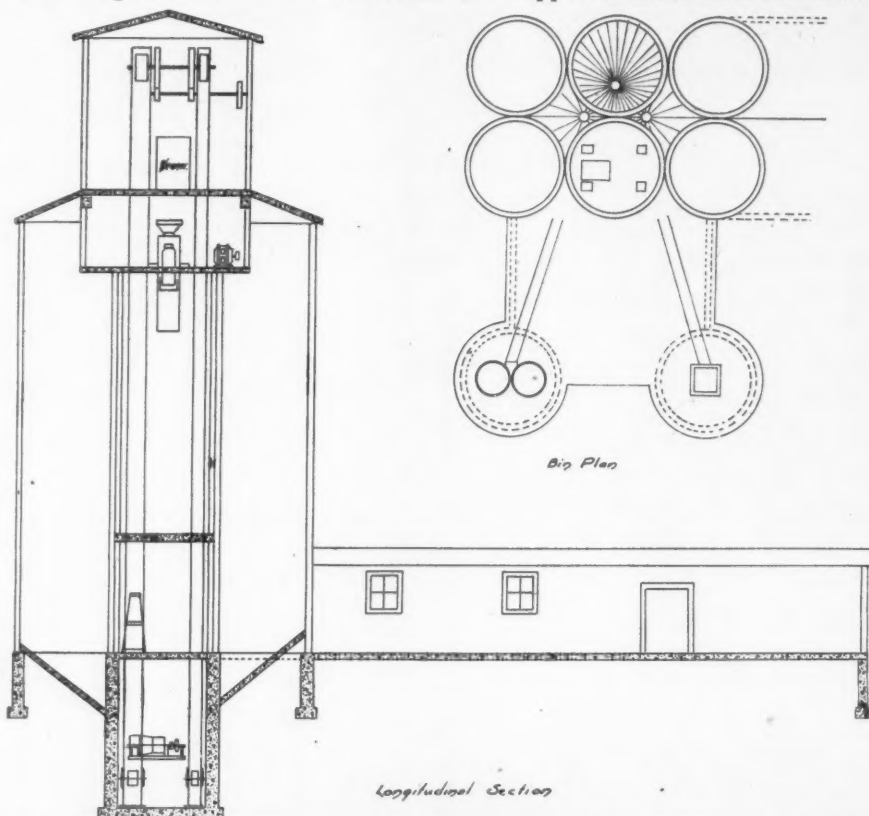
Fire-proof Grain Elevator of Hollow Tile and Concrete

NEW BUILDING OF THE MARION CO-OPERATIVE ELEVATOR CO., MARION, IND., GOOD EXAMPLE OF MODERN ELEVATOR CONSTRUCTION

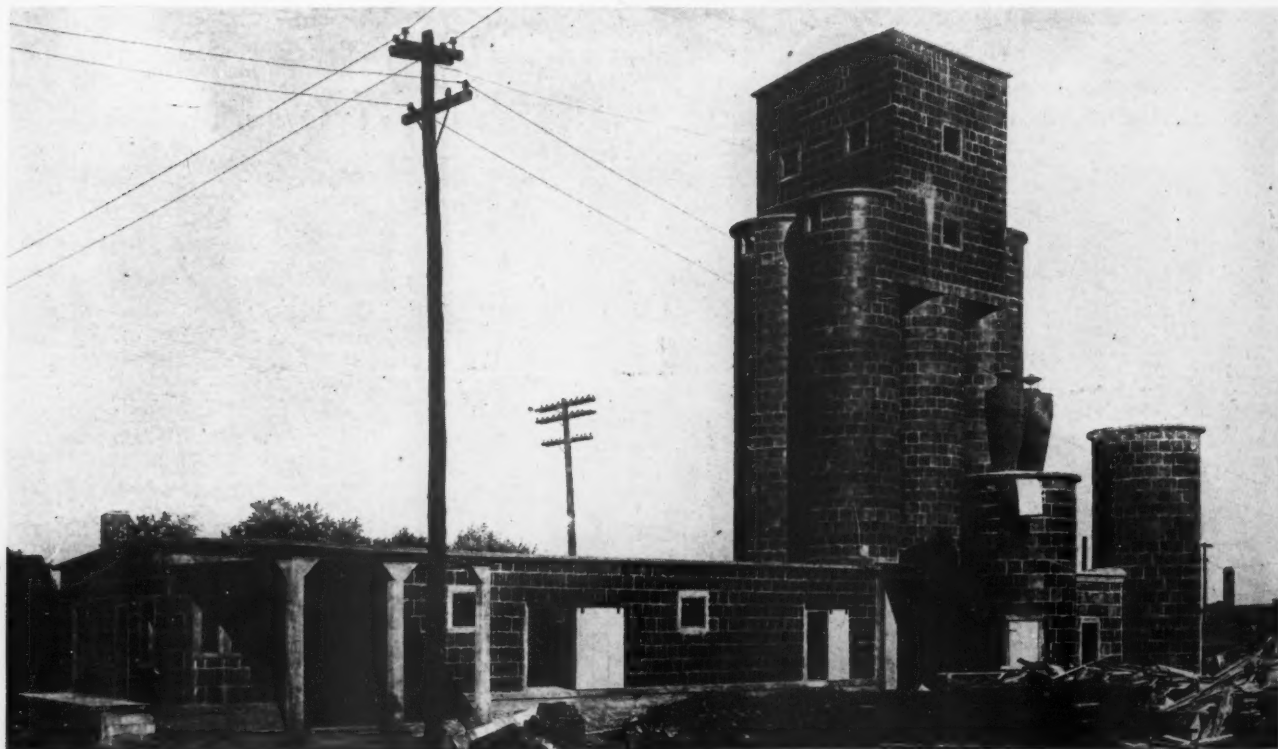
THE great value of the grain that the present-day grain elevator operator exposes to fire hazard during the harvest season has brought to the fore a demand for fireproof storage buildings, and contractors in submitting plans for such buildings are now turning to non-combustible materials. The Marion Co-operative Elevator Co., Marion, Ind., recently erected the building shown in the accompanying illustration, and it has aroused a great deal of interest among elevator men.

The building is constructed of hollow clay tile and concrete. The capacity of the elevator is estimated at about 20,000 bushels. It consists of a concrete basement to be used for the storage of farm products, such as wool, and of six elevators and superstructure of tile. The wareroom, one story in height and 20 by 50 feet in dimensions, has a concrete roof and is designed for a general storage room for sacked feed and other products. In the basement of the main elevator is

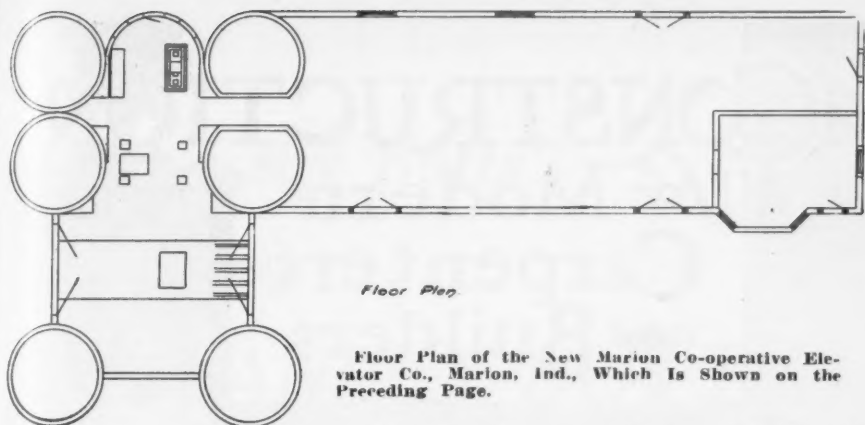
located the power sheller, and space here is provided for an attrition mill. The office and scales room are located in the wareroom at the opposite end from the elevators.



Longitudinal Section and Plan of Bins in the Tile and Concrete Building of the Marion Co-operative Elevator Co., Marion, Ind.



Grain Elevator of the Marion Co-operative Elevator Co., Marion, Ind., Constructed of Hollow Tile and Concrete. The Bins Have a Capacity of 20,000 Bushels, While the Basement and Storage Room Provide Space for Other Products the Company Handles. This is a Fireproof Building, Such as Elevator Operators Are Demanding, Now That Grain of All Kind Is so Valuable.



Floor Plan of the New Marion Co-operative Elevator Co., Marion, Ind., Which Is Shown on the Preceding Page.

The dump is located between the main elevator and the cob and dust bin, as shown on the floor plan.

The bins are located and constructed so that they may be used for surplus storage and emptied directly into the pit of the dump, whence the grain is carried to the boot of the elevator leg in the sub-basement beneath the working floor. The main bins are 37 feet 6 inches high and the walls of the adjoining bins are built of specially constructed tile, and form interspace bins between the main bins.

The cupola is built of tile also and has a concrete floor and a concrete roof. In the cupola are the cleaner and automatic scale. Power is furnished by electric motors.

Twisted steel reinforcing rods were used in the construction of the bins, setting into the mortar course.

The reinforcing rods bind the blocks together strongly, making the whole a solid structure, such as is needed to prevent bursting.

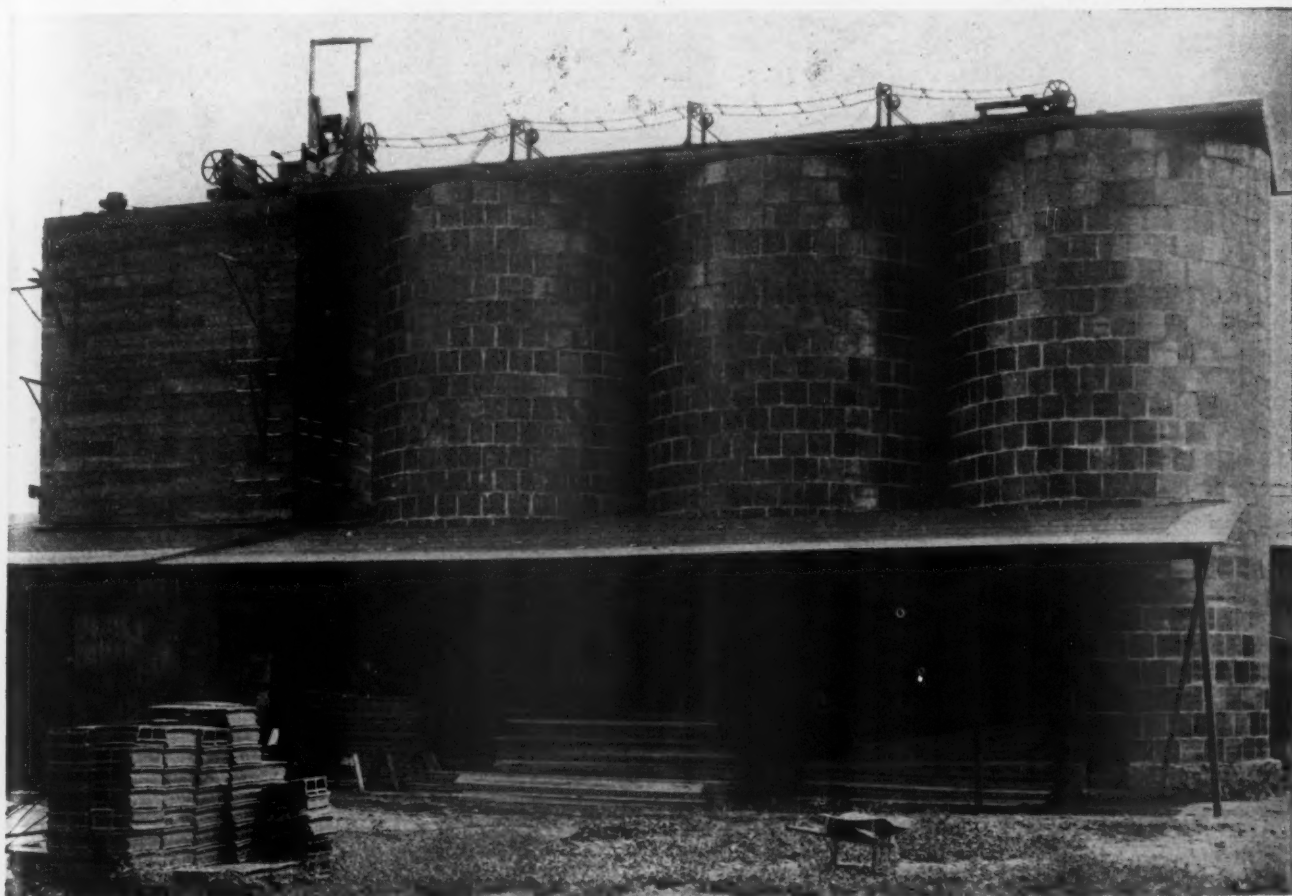
The vertical cross-section shows the concrete footings for the bin walls, the sub-basement and the "boot" of the elevator leg. The floor plans show the location of the bins and other features.

Hollow Tile Buildings for Coal Storage

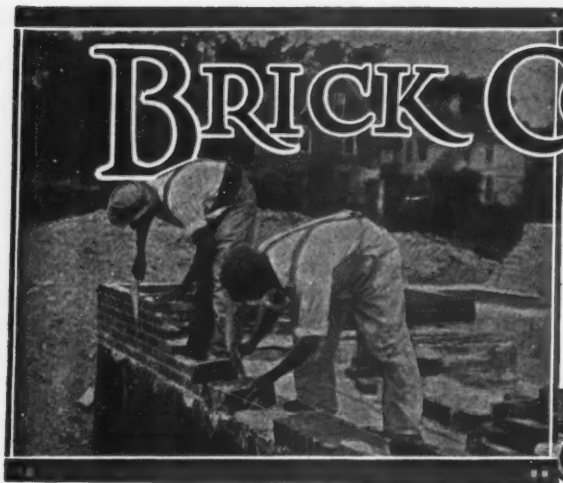
Another type of fireproof building of hollow tile construction is shown by the illustration at the bottom of this page. This is the new building of the Lyons Coal Co., Lyons, N. Y. It is constructed of shaped hollow tile, such as is used in silos, and set on a concrete foundation. The three storage bins are filled by a power elevator, shown on top of the structure, and are emptied by gravity. The photograph was taken during the course of construction. The loading chutes are shown imbedded into the tile walls. Steel reinforcing rods were used in the construction of these bins, set into the mortar courses.



THE questions asked and answered in the Correspondence Department all are of the sort that often confront the members of the AMERICAN BUILDER Family. It is a liberal education in building to read and study them.



Storage Building of the Lyons Coal Co., Lyons, N. Y., During Course of Construction. The Coal Is Elevated to the Top of the Bins and Dumped. Gravity Carries the Coal to the Wagons Thru the Chutes, One of Which Is Shown Under the Shed Roof.



BRICK CONSTRUCTION

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Design for a Seven-Room Brick House

CHIMNEY IMPORTANT FEATURE OF MODERN HOME—HOW TO BUILD IT

BRICK houses always are in demand. They are good to look at, have an air of stability that gratifies the owner, and are warm in winter and cool in summer. In the larger cities, where there are building restrictions within the fire limits, a great ma-

jority of homes are constructed of brick. The brick house design shown herewith is the size and type that the average home builder erects. Its dimensions are only 30 by 40 feet, it contains seven good-sized rooms, and presents a pleasing appearance, with its broad



SEVEN-ROOM BRICK HOUSE. Here is a design for a home of rough face brick that will find many admirers among prospective home builders. Its dimensions are 30 by 40 feet, and it has a most attractive porch. The garage, shown at the rear, is of the same materials and same architectural design.

"Don't say Butts" —

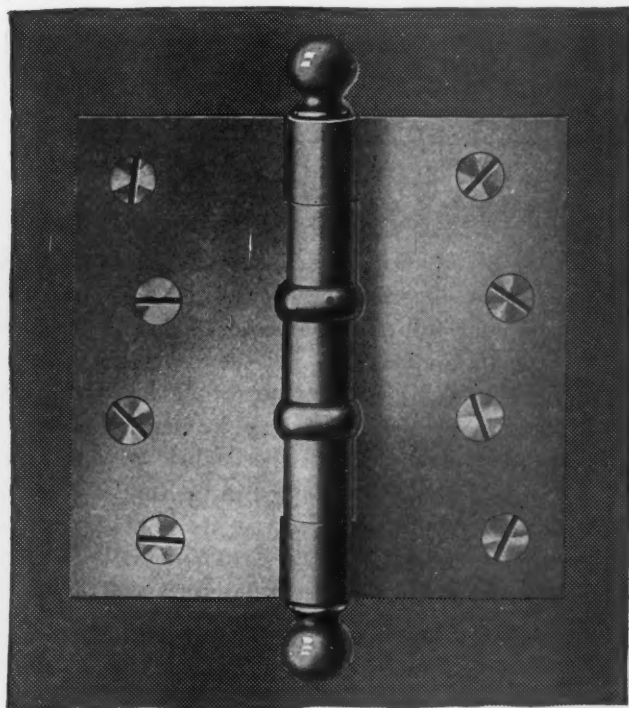
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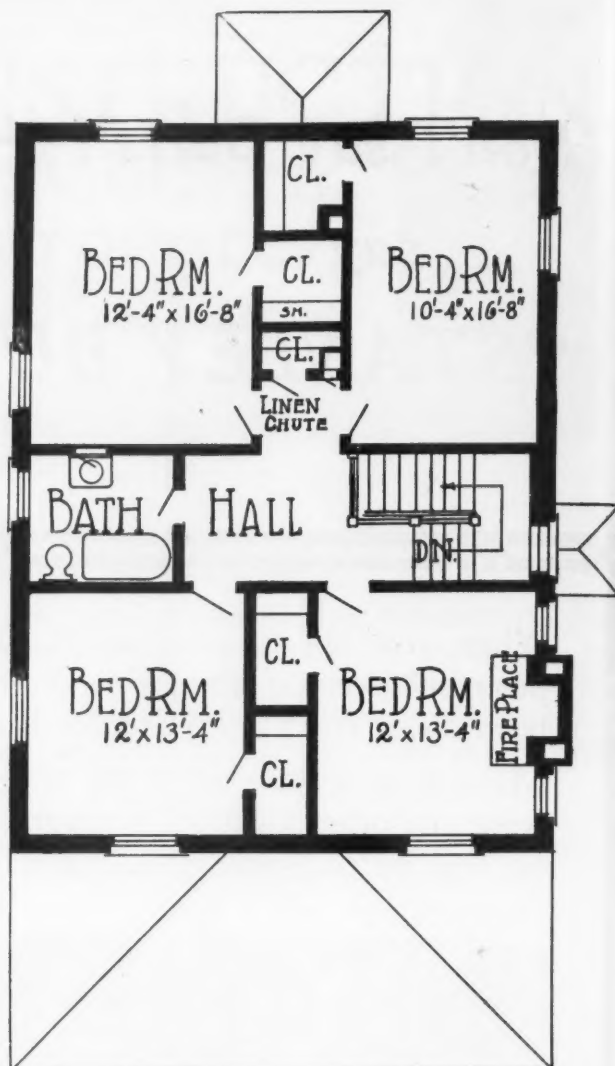
How the rooms are arranged and the many good features contained in them are shown by the floor plans. Across the front of the house is the living room, 27 feet 6 inches by 13 feet. The dining room is 12 by 16 feet, and off it is a porch with broad windows that may be used either as a sun parlor or dining porch. The kitchen adjoins the dining room at one side, while between the stair hall and the kitchen is a cozy breakfast nook.

Four bedrooms and the bathroom are shown on the second floor plan. Each bedroom is on a corner, having windows in two walls, and all the rooms open into the central hall. The bathroom is at the end of the hall, conveniently located.

The feature of almost all modern homes is the fireplace. In this design the fireplace is in a chimney in the outside wall, and a second fireplace is located in the bedroom above. When the chimney has an outside exposure, its walls should be at least 12 inches thick, to prevent the cold from interfering with the draft. As chimney construction is an important fea-



First-Floor Plan of Seven Room House of Rough Face Brick.



SECOND FLOOR PLAN

Second Floor Plan of Seven-Room House of Rough Face Brick.

ture in building homes, no matter what material is used for its walls, the discussion of chimney construction that follows will be of especial interest to contractors and builders.

Well-built chimneys mean that the home owner will have a comfortable place in which to live, as his heating plant will thus be enabled to work efficiently. The chimney is so located in the house that it is practically impossible to correct its faults after the home has been erected. Successful builders take special care to see that it is properly designed and constructed.

Chimney Improvement Building Feature

With practically no exception, the chimney of a building, no matter what materials are used in the outside walls, is constructed of brick. And the chimney is one of the most important features of the building, the utility of the heating plant is dependent upon it. It is an easy matter to change the heating plant, whether it be steam or hot water boiler, or a hot air furnace, but it is an expensive matter to alter the size of the chimney, because so many structural changes are necessary. Therefore the chimney must be care-



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Estimating Practical rules. Problems worked out from the plans. Brickwork and carpentry. Excavations. Labor and material for footings in brick, concrete and rubble stone. Methods of practical builders. Reinforced concrete—full plans and specifications for re-inforced concrete buildings. Estimates of labor and material required. Labor and material for brick work: figuring common and pressed brick walls of different thicknesses, etc. Chimneys, fire places and cisterns. Fire proofing, tile, tile flooring, arches, partitions, furring, terra cotta, etc. Lumber and timber; figuring board feet. Estimating posts, girders, sills,

joints, studs, bridging, rafters, etc. Estimating all kinds of roofs, floors, siding, cornices, etc. Labor for rough and finished carpentry.

Estimating mill work. Labor and material for window and door frames, sash, blinds, base board, wainscoting and all kinds of closets, cupboards, etc. Lathing, plastering, sheet metal work, exterior and interior marble jointing and decorating, glazing, plumbing, heating, wiring, etc.

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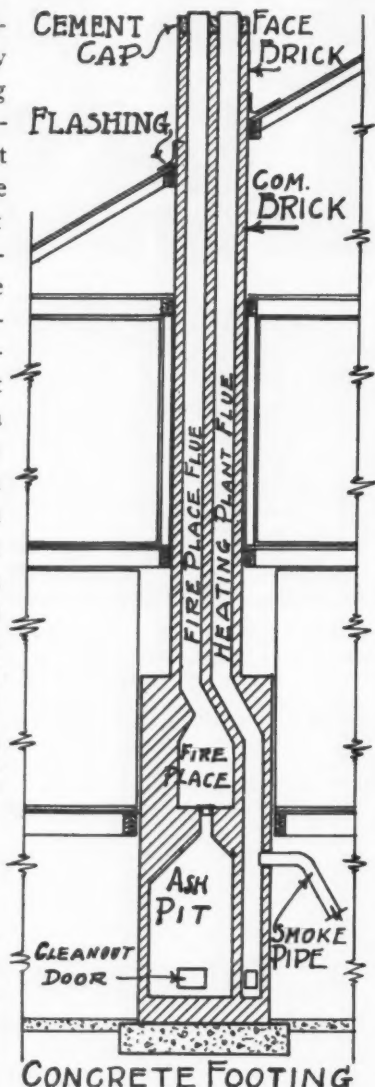
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fully planned and will be well constructed.

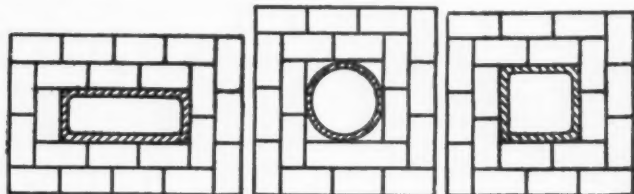
Modern demands for comfort, attained in cold weather by up-to-date hot air, steam or hot water heating plants, make accurate chimney construction necessary. The chimney flue of a residence must serve a double purpose; it must maintain a relatively steady draft under varying atmospheric conditions, and it must carry away the smoke and gases that result from combustion of the fuel in the furnace. The chimney must have, according to the best modern practice, a draft equaling the pressure of from 15-100 to 2/10 of an inch of water. It also must have enough area in square inches at that draft to discharge all smoke and gases at all stages of combustion, from its top, with excess of friction.

Place Chimney to Suit Heating Plant

Every boiler manufacturer gives the smoke-pipe size for each size and type of boiler he manufactures. It would be absurd to construct the chimney of a house without giving consideration to the demands which will be made upon it. It also should be borne in mind that the chimney is not meant primarily as an ornament. Its mission is to make it possible for the heating plant to maintain a temperature of 70 degrees when the outside temperature is zero. Any heating system that cannot do this is not a heating system.



Cross-Section of Chimney, Showing Proper Method of Construction, with Two Flues, One for the Fireplace.

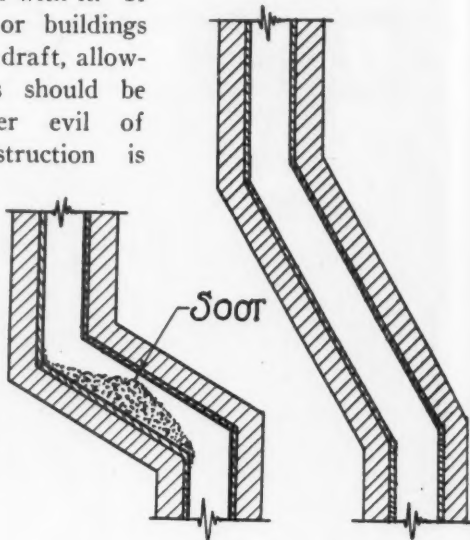


Oblong Flue.

Brick Flue with Round Tile or Iron Lining.

Square Flue.

There should be no outside interference with the draft of a chimney. The chimney top should not be lower than any projecting portion of the building, or even on a level with it. If nearby trees or buildings will affect the draft, allowance for this should be made; another evil of chimney construction is that of topping chimneys with capstones, whose small openings restrict the area of the chimney's delivery from 20 to 30 per cent. For instance, an 8 by 12-inch chimney with two 5 by 6-inch openings in the capstone, has its area of delivery reduced from 96 to 60 square inches.



Effect of Off-setting Flue at Too Large an Angle. Proper Pitch of Chimney to Prevent Soot from Clogging the Flue.

The intelligent builder will know beforehand the amount of radiation required to heat the house he is going to build, and will select the heating equipment which best meets the heating requirements of the house.

The Importance of the Chimney Flue

Undoubtedly 90 per cent of the failures of the heating apparatus, when it is of sufficient size and there is the proper amount of radiating surface, are directly traceable to the chimney.

Aside from the outlet at the top, the chimney should have no opening other than that required to connect the smoke pipe with the heater. This opening should conform in size to the smoke connection of the heater. Manufacturers of heating apparatus are careful to designate what this size should be, and this specified size never should be changed. The flue should start only a few inches below the smoke-pipe opening, the part of the chimney beneath being constructed solid up to this point, with the possible exception of a clean-out door. Smoke, in ascending the flue travels in a spiral form against the pressure of the atmosphere and will not rise until the air in the flue is sufficiently lightened by expansion to overcome this pressure, when it will be forced upward by the circulation caused by opening a draft door below the grate of the heater.

Flues are built round, square and oblong, and the degrees of efficiency of the three different styles is indicated by the order in which they are named. A brick flue, with a round tile or iron lining, is without doubt, the best that can be secured, as the heated

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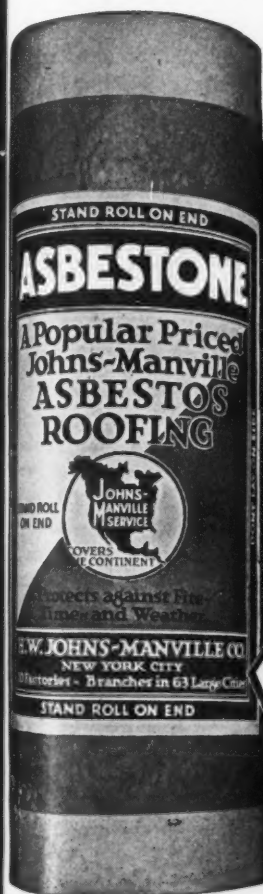
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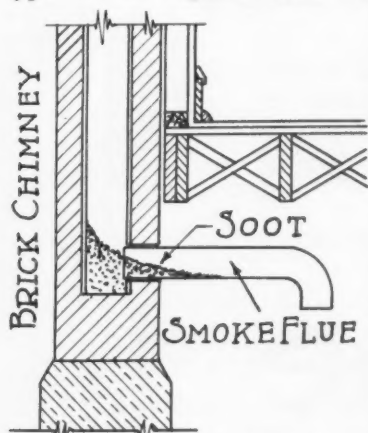
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gases and smoke occupy its full area. The next best type is the square flue. The smoke and gases



Smoke Pipe Opening Placed Too Near the Bottom of the Chimney. Soot Collects at the Bottom and Obstructs Draft.

spiral up thru the center of the square flue, leaving dead air spaces in the corners. This is equally true of the oblong flue, altho here the dead air space is larger because of its shape. This condition may be carried to such an extreme, as for instance in a flue 4 by 10 inches, that the amount of dead air space will equal or even exceed that portion of the flue which is in active service, with the result that a down draft is created, causing friction by the intermingling of opposing currents of air, and rendering the chimney practically useless. A clear opening, 8 by 8 inches, would be a great deal more efficient than a flue 4 by 24 inches, altho one has only 64 square inches of area against 96 inches in the other.

Chimney in Center of House Most Efficient

A chimney erected in the center of a building is more efficient than one built in the outside wall, because it is surrounded by warm rooms, which in a large measure prevents the condensation of the smoke, the cooling of the gases and the precipitation of the soot. When constructed in an outside wall, the exposed side of the chimney should not be less than eight inches in thickness.

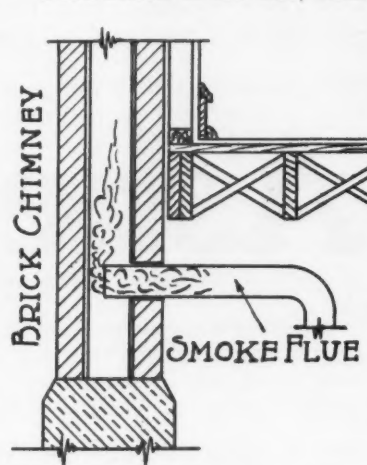
Offsetting of flues should be avoided if possible. If conditions, however, make such construction absolutely necessary, the angle of the offset should be sharp, otherwise the soot and ashes will form a deposit in the offset and clog the flue.

The height of the flue simply governs the velocity having no effect whatever on the area, which should be sufficient for the work demanded of it. A chimney in a building two or more stories has sufficient height to be suitable for all purposes. It should extend above the building to such a distance that adjacent struc-

tures or roofs will not interfere with its working, or cause a possible down draft by reason of the wind blowing over the roof and down the chimney. Trouble with draft in a heating system may be due to any one of the following causes:

Obstruction in Flue Prevents Draft

Obstruction in the flue, such as extensions of bricks



Common Cause of Poor Draft. The Smoke Pipe Extends Too Far Into the Flue Opening.

or timbers, or an extension of smoke-pipe too far into the flue opening.

Loose or open clean-out doors at the base of the chimney.

Height insufficient to clear surrounding obstructions to draft.

Insufficient area for work demanded of flue.

An enlarged or contracted chimney at some point in its length. A flue is

only as large as its area at its smallest point.

Two or more pipes from different apparatus connected to same chimney and working against each other.

Offsets of too great an angle, that is, too flat.

Loose division walls between flue, one of which is used for the heater.

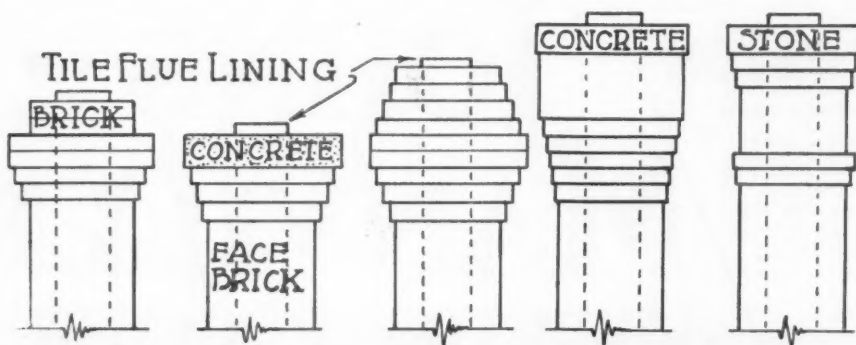
These are some causes of difficulties commonly experienced with chimneys, and their enumeration should prove a valuable aid in preventing and locating any possible trouble.



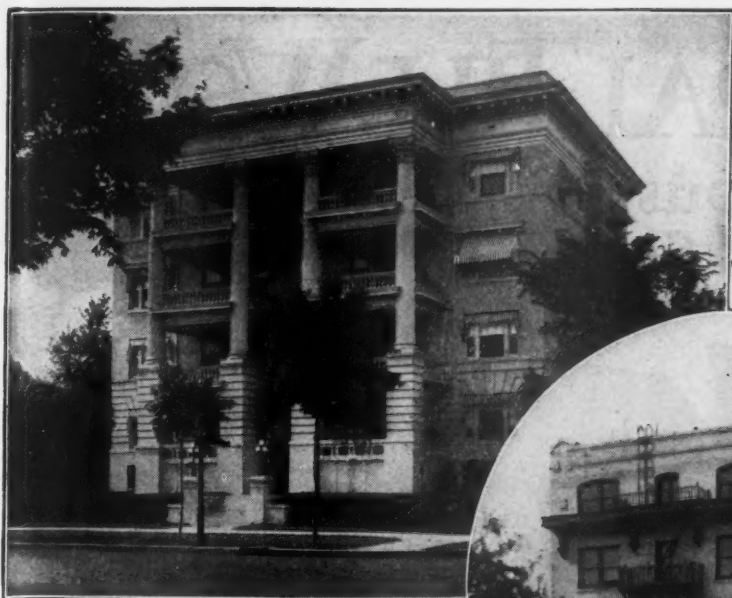
Beaver Board Companies Buy Tonawanda Mill

As a part of an extensive program of expansion, The Beaver Board Companies of Buffalo, N. Y., recently announced the purchase of the Tonawanda Board and Paper Company of Tonawanda, N. Y., at an expenditure for buying and proposed developing of more than \$2,000,000. The Tonawanda Board and Paper Company is situated only five miles from the Administration Offices and Buffalo plant of The Beaver Board Companies, and only 25 miles from their mill at Thorold, Canada. It fronts on the Niagara River and Tonawanda Creek, and had always been considered one of the best mills of its kind in the United States.

A new company has been incorporated under the name of The Beaver Board Companies and controls the production of beaver board and allied products. This new corporation is capitalized with an authorized issue of \$25,000,000 first preferred, \$15,000,000 second preferred, and 500,000 shares of no-par common stock. Four thousand shares of common stock were made available to employees and were over-subscribed by 50 percent. Additional district offices have been created at Dallas, Tex.; Atlanta, Ga.; St. Louis, Mo., and Denver, Colo.



Suggestions for Brick Chimney Tops, Showing Caps of Different Materials.



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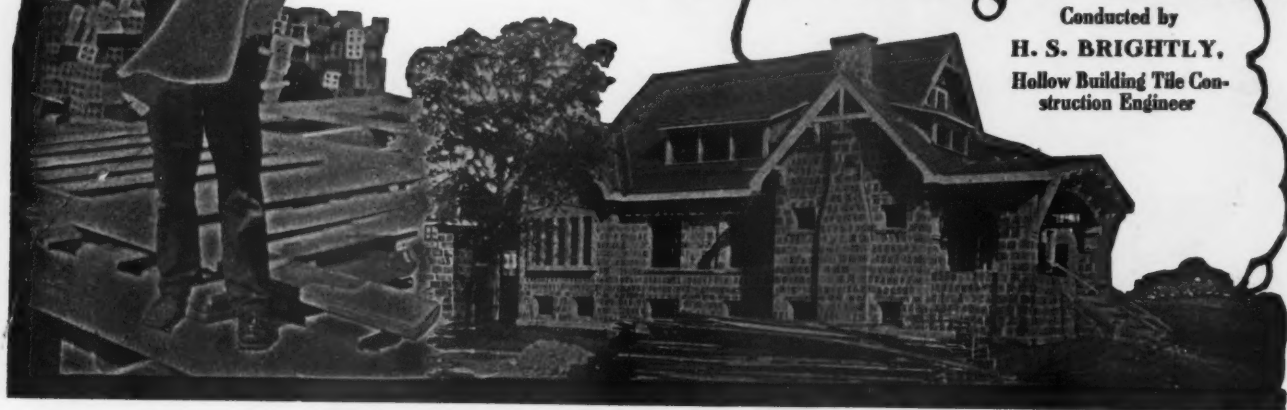
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Hollow Building Tile Construction

LINTEL DETAILS; THE FIRST STEP IN FIXING LINTEL HEIGHTS AND THE HEIGHTS OF FRAMES FOR OPENINGS

By H. S. Brightly

IN the September article I stated that in the selection of window and door frames for use in hollow tile wall it was advisable, whenever possible, to use frame sizes that will work in with the hollow tile units without cutting. Last month I gave the method of figuring story heights, and this month the methods of building lintels in hollow tile walls are given, as in proper sequence these questions must be taken up before proceeding to fix the exact size and positions of openings, and the reason for this will be made clear by this article.

It is quite customary in placing openings in masonry walls to fix the height of sill at the certain desired distance above the floor, as the first step, and then figure up to the lintel, adopting a height of frame that will suit the architectural requirements for exterior effect, and both suit the practical requirements of proper lighting area and fit in with the required number of brick or stone courses.

For hollow tile walls this method should be reversed

and the lintel height fixed first, figuring down from the lintel to obtain the proper height for window frames, by assuming the desired sill height and then selecting a frame size that will best fulfill the following three requirements:

- A—Frame to be of a standard stock size,
- B—that will course in with the tile, if possible.
- C—and have the sill at approximately the desired height above floor.

Any Blocking Up Required Should Be Done Under Sill

Any cutting of tile and blocking up should be done under the sill, never under the lintel, which should invariably course in with the tile in balance of wall. All window lintels should be kept on the same level, except for special requirements, and it is generally best, particularly in residence buildings, to keep the window lintels in a line with the lintels over doors. There are several reasons for this; one is that it simplifies construction, as in hollow tile walls the structural lintels are usually formed of the tile, and it is naturally best to have these all occur in the same course in each story. Another reason is that the usual outside door is seven feet in height, and this is also the minimum height for the top of window sash fixed by several of the state housing and tenement laws, and this height, further, is about right for the average story height in most residence buildings. There is still another consideration in connection with hollow tile

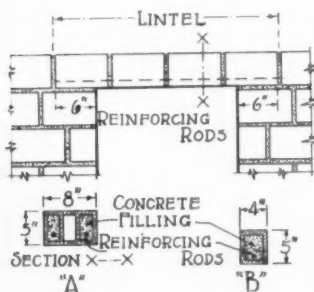
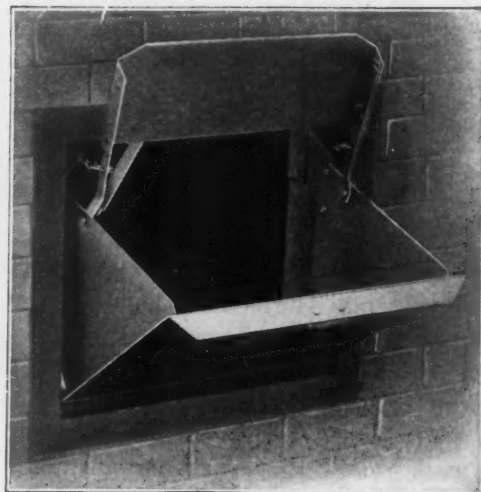


Fig. 1. Section "A" for 8-Inch Walls of 8 by 5 by 12-Inch Tile; Section "B" for 4-Inch Walls of 4 by 5 by 12-Inch Tile and for Combining with Section "A" to Form Lintel for 12-Inch Wall Built of These Two Shapes. Similarly for 16-Inch Thick Wall Two Lintels of Section "A" Would be Used.



Kewanee Chute locked—seen from the cellar



Kewanee Chute open—seen from the street

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buildings, which is, there generally should be sufficient depth between the window head and the underside of joist to permit the building of a structural lintel of proper depth. With the 12 by 12-inch face end construction tile this means a full 12-inch course, and with the 8 by 5 by 12-inch building tile at least two courses. Therefore, this article will be devoted to lintels and the next article will continue the subject, fixing lintel and sill heights for various story heights and frame sizes.

Lintels for Hollow Tile Walls Generally Formed of Tile

Lintels are generally formed of hollow tile and often of the same shape tile that is used in the wall. For walls of 4 by 5 by 12-inch tile, 8 by 5 by 12-inch tile, or for thicker walls that may be built of a combination of these shapes, a reinforced lintel is almost universally used. These are formed as shown by Fig. 1, A. B. The number of tile required to span each of the various openings, allowing for a bearing on wall of at least six inches each side of opening, are set up on end. Reinforced rods of the size required are placed in the outer cells of the tile and these cells filled with concrete or cement mortar.

Lintels of this type will serve for all ordinary openings. The size of reinforcing rods that are recommended by the different manufacturers vary somewhat with type or shape of the particular manufacturer's tile, as well as with the span of lintel and load to be carried. For all ordinary purposes these would range from $\frac{3}{8}$ -inch to $\frac{3}{4}$ -inch round or square rods; $\frac{1}{2}$ -inch square or $\frac{5}{8}$ -inch round rods, one rod to each lower cell, or four-inch thickness of the wall, being sufficient for average spans with most forms of tile, and over ordinary single window or door openings in residence buildings the next size smaller round or square rod is frequently ample. A table of spans and reinforcing required for lintels of the various shapes and thickness of tile will be given in a later article.

For walls of 12 by 12-inch tile of any thickness, whether laid on end or side, there are three or four types of lintel commonly in use, all of which should have either 6-inch or 12-inch bearing on wall. There

is the reinforced tile lintel similar in type to the one already described, two sizes of which—for an 8-inch and for 4-inch wall—are shown by Figure 2, A. B. This form of lintel has been very extensively used, but has some disadvantages when the openings are wide and the walls are 8 inches or more in thickness. For

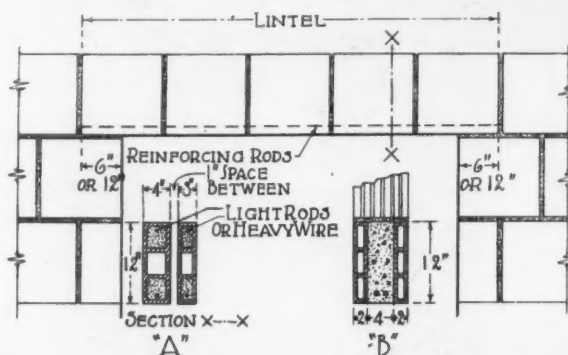


Fig. 3. Section "A" Built in Two Sections for 8-Inch Walls, One Section of 4 by 12 by 12-Inch Tile and One of 3 by 12 by 12-Inch Tile. Section "B" for 8-Inch Walls, Built of Two Thicknesses of 2 by 12 by 12-Inch Tile with Reinforced Concrete Beam Between. Similar Lintels for 10 and 12-Inch Walls Are Built Either with 2 or 3-Inch Thick Facing Tile, and for 6-Inch Walls Same as Section "B" with Either the Inner or Outer Tile Omitted, Using a Board Form in Place of Same During Construction.

such lintels the top cells "T" "T" should also be filled with concrete, reinforced by light rods. These lintels are heavy and somewhat difficult to place on the wall by hand. Therefore, where the span is wide, it may be found advisable to handle them with a pole and tackle. The modified form of reinforced lintel, which is shown by Figure 3, A, is an improvement. It is built of two separate sections which are lighter, and when set on the wall have an air space between, retaining the insulating feature. With this form of lintel it is customary to fill both the top and bottom cells with concrete, placing only a thin rod or piece of heavy wire for reinforcement in the upper cell. This prevents breaking in handling, even tho the concrete may be a little green, and also gives a stronger lintel.

Reinforced Tile Lintels That Are Built on the Wall

Still another form of reinforced tile lintel is shown by Figure 3, B. This lintel is not built on the ground and later set in place like the forms already described, but is built on the wall, and for that reason has certain advantages over the other types. It is not practical to use this lintel for walls less than 8 inches in thickness, and for such walls the inner and outer tile should only be 2 inches in thickness.

The concrete will adhere very strongly to the surface of the tile and there is no danger of the tile separating from the concrete between same. Lintels of both types shown by Figure 3, A and B, may be used on fairly wide spans. For very wide spans type 3-B may be built two courses of tile in depth or have reinforcing rods placed also at top of concrete.

Rich Concrete Mixture Should Be Used

The concrete used for all these forms of reinforced tile lintels should be a good rich mixture, 1-2-4 mix or better, as very little concrete is required. Fre-

(Continued to page 116.)

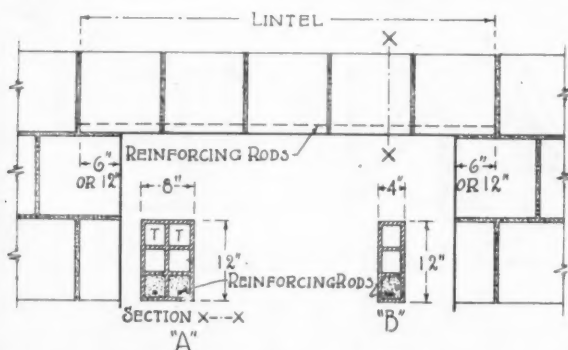
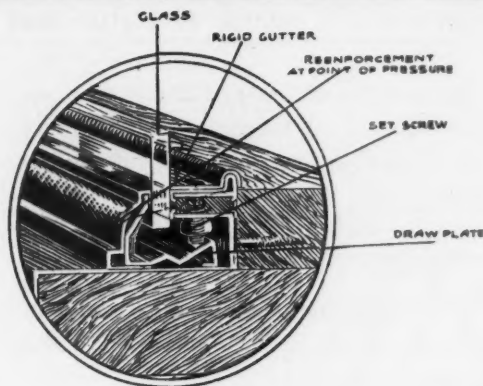
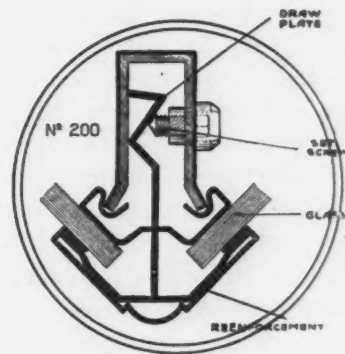


Fig. 2. Section "A" for 8-Inch Walls of 8 by 12 by 12-Inch Tile; Section "B" for 4-Inch Walls of 4 by 12 by 12-Inch Tile and for Combining with Section "A" to Form Lintel for 12-Inch Wall. Lintels Made of Single Blocks Similar to Section "A," but 10 and 12 inches in Thickness, Are Used for 10 and 12-Inch Walls, Respectively. All Lintels for Section "A" Type for Early Wide Openings, Particularly for 10 and 12-Inch Walls, Should Have One or Both of the Cells "T" Filled with Concrete, Reinforced with a Light Rod or Heavy Wire to Prevent Breakage in Handling



Full Size Socket
Key for Setting
Zourli Safety Key



Specify ZOURI

Safety Store Front Construction

The Only Absolutely Safe Store Front Construction

ZOURI Safety Store Front Construction has proved beyond question its superiority over all others. It is today acknowledged by the highest authorities to be the only real safety construction.

Records show that 70 per cent of all store window breakages are from unknown causes. In the hundreds of ZOURI installations in Chicago alone, many of them in the most unprotected locations, *there has not been one single instance of mysterious breakage.*

A Few Vital ZOURI Safety Features

Note these ZOURI Safety patented superiorities. Each one is patented. They can be secured in absolutely no other type of construction. They are an absolute protection against breakage.

In ZOURI Safety Construction, contact is attained between metal and glass by reason

of the patented ZOURI Safety key-set feature. With this key-set feature the sense of touch enables one to know the moment the point of contact has been reached. It is, therefore, absolutely impossible to get a glass distorting pressure, which is one of the primary causes of breakage.

ZOURI SAFETY STORE FRONT CONSTRUCTION

Of equal importance is ZOURI Safety Indirect Screw Pressure. With this Indirect Screw Pressure the glass is not distorted at any screw point of contact.

Another improvement is the ZOURI Safety Self-Adjusting Setting Block. The cushion of this setting block moves as the pressure is exerted in getting contact. This insures perfect contact with the back rabbet, or gutter. Thus it eliminates any possible distortion of the glass.

These are but a few of the many ZOURI Safety im-

provements that should make you recommend ZOURI Safety Key-Set construction. To list them all here is impossible. Our illustrated catalog explains to you in details how ZOURI is the only construction that offers you a rigid back gutter. How ZOURI Safety scientific reinforcement distributes the pressure equally on a rigid rabbet. You should know all these facts.

Free Catalog and Portfolio

Write today for our free catalog. Every builder should have this remarkable book. It is the most complete book of its kind ever published.

We have also prepared for builders a special portfolio of ZOURI Safety details and construction. You will find these invaluable in making your plans.

All this will be sent you *absolutely free* upon request. Simply fill in the coupon on the bottom of this page, and send it to us NOW.

ZOURI DRAWN METALS COMPANY

Factory and General Offices: Chicago Heights, Ill.

Makers Also of the Famous International Store Front Construction

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Gentlemen:
Please send me without any obligation a copy of
your free catalog. Also your special architect's
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Some Side-Lights on the French Middle Class Home

(Continued from page 66.)

First of all, the average home has no bathroom. I do not refer here to the residence of the well-to-do Frenchman or to old mansions rebuilt along modern lines. I refer to the domicile of the average wage-earning French citizen. The modest home has no bath tub, despite the fact that there is running water in all the cities. I don't know whether this is due to shortage in material for making bath tubs or whether it is because room cannot be spared for tub and closet; but whenever the Frenchman wants a bath he goes to one of the many public bathing establishments in his home town. Here he is served with towel, soap and perfume—all for the price of seventy-five centimes (15 cents in our money). Oddly enough, the rush hours in these bath houses are Saturday afternoons, so the Frenchman and the American have some things in common, after all.

Opportunity for Sanitary Ware Exporters

There really must be wonderful opportunities in France for the American manufacturer of bath tubs, chemical and flush closets. I am not certain whether articles of this kind may be imported into France at the present time, but it would be well worth while for the American manufacturer to ascertain the actual condition in this respect.

Another unusual thing about the average home is the use of shutters. Except the hotels, villas and homes of the rich, every small residence has its shutters. They are either on the outside or on the inside, but they are there. Some of the streets in the old towns are very narrow, and it is to attain some degree of privacy that the Frenchman boards up his windows with shutters at night, and in many cases thruout the day. In midsummer, when it is very warm, a tenant may step to his front window and take in the view, which is nothing more or less than a burlesque. It was Irvin



The French Are Strong for Plazas, and the Homes of the Wealthy Monopolize the Square. This Is Lourdes in the Pyrenees.

Cobb who said that the French family have about as much privacy as a goldfish in a glass bowl on the parlor table.

All the new homes are just about on a par with the American home. The French builder, however, does not pay so much attention to the commissary or sanitary departments of the home he designs. Further, heating and lighting have not been developed to the extent they have in America.

Farmhouses Crude and Cramped

The home of the French farmer, if such he can be called, usually is very old. The conveniences are crude and the arrangement of rooms indicates how cramped the owner is for space. In some of the very old farm houses the lower part of the building serves as a cow and horse stable. This is, of course, insanitary. Fireplaces furnish the little heat the French farmer manages to get along with during the cold months.

Far behind the times as to his home, the French farmer also is a back number as to his agricultural operations. Yet, despite his limitations as to size of farm and equipment, the French farmer makes his land yield as no American could. He is happy and contented. He enjoys himself immensely at the many fetes, and always has plenty of his favorite wine. How he manages to do it, is a wonder; but then, the French are wiser than they seem.



Takes Helper With Him

"You never travel alone in your auto."

"No. I always like to have a friend along to do the work if I should have to change a tire."—*Detroit Free Press*.



Nothing Wrong About That

"I dunno whether it's proper or not. Mebbe so."

"What's the matter, maw?"

"My daughter's divorced husband is courting her again."—*Louisville Courier-Journal*.



Time is Ripe

"Now, son, you're through college. Get busy. The world is your oyster."

"Yes, dad."

"And the oyster season is now opening."—*Louisville Courier-Journal*.



Infants Terrible

Mrs. A.—"Are you bothered much with your children telling lies?"

Mrs. B.—"No, but I am with their telling the truth at very inopportune moments."—*Boston Evening Transcript*.



Frank About It

"So you are engaged?"

"Yes."

"How romantic. Is he your ideal?"

"No," said the girl candidly, "merely the best offer I could get."—*Louisville Courier-Journal*.



Vulcanite

FAMOUS FOR QUALITY

Roll or Strip Shingle STYLE "D"

Inexpensive But Durable -

Vulcanite Strip Shingles Style "D" are inexpensive in three ways:

1st—Their actual cost per square is much lower in every instance than the best grade of wood or individual asphalt shingles.

2nd—These shingles coming in rolls make laying very rapid and accurate, thus saving time and time costs money these days.

3rd—The cost of their annual up-keep over a long period of years is insignificant. Often thirty years or more will pass before they require attention.

As far as Durability is concerned we have this to say:—Nothing but the best of materials go into their manufacture. They have given perfect satisfaction and protection against the elements on thousands of buildings. Are weather and fire-resisting. We are proud to have them bear the name of Vulcanite.

Are surfaced with natural colored red or green crushed slate. Tones are as beautiful as they are enduring.

Dealers—Contractors—Write for our "Dealer Helps." Let us show you how to increase your business.

Patent Vulcanite Roofing Co.

Chicago, Kansas City, San Francisco, New York, Cincinnati, Birmingham,
Minneapolis, Albany, Anderson, Ind., Franklin, O., Buffalo



You are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to the Building Industry

The Mathematicians to the Fore

That the readers of the AMERICAN BUILDER are not merely "rule o'thumb" workmen, but really know the science of their business has been demonstrated by the great number of solutions submitted to the problem of Morris J. Cole, of Lethridge, Alberta, published in the Correspondence Department of the August issue. All the answers were identical, altho several different methods were used.

Mr. Cole's problem was: Given the chord and sine of a segment of a circle, find the radius. In his problem the chord was 15 feet, and the sine three feet. The answer was 44 feet, 2 inches.

The solutions of the problem submitted by two members of the AMERICAN BUILDER Family, and the names and addresses of 23 others who solved the problem were printed in the Correspondence Department of the September issue. Since that time 21 other AMERICAN BUILDER readers have sent in answers to Mr. Cole's problem. They are:

L. K. Parr, Padroni, Colo.; D. S. B. Montreal, Que.; F. J. Hethrington, Ottawa, Ont.; George H. Railsback, Manhattan, Kan.; Percy Taylor, High River, Alberta; Ralph Mitchell, Lander, Wyo.; T. J. Tilden, Turlock, Cal.; Albert Randall, Amarillo, Tex.; Alvah L. Huffman, Toledo, Ill.; Robert H. Heron, Newburgh, N. Y.; Ernest R. Richards, Chicago, Ill.; W. B. Aldrich, Santa Barbara, Cal.; R. M. Van Gaasbeck, Brooklyn, N. Y.; George M. Drew, Buffalo, Minn.; J. W. Miller, Ellwood City, Pa.; Eric Lindstrom, Dakota City, Ia.; E. Madden, New Lexington, O.; Henry Van Riessen, Kalamazoo, Mich.; W. Ross Durham, Erie, Pa.; T. S. Pennebaker, McMinnville, Ore.; K. M. Allen, North Wilkesboro, N. C.; E. W. Koering, Vineland, N. J., and N. V. Wesselmann, Dodgeville, N. Y.

On behalf of Mr. Cole, THE EDITOR wishes to thank the members of the AMERICAN BUILDER Family for their willingness to help the readers of the AMERICAN BUILDER. This is another demonstration of the spirit of friendliness among the readers of this magazine.—THE EDITOR.

Getting Area of Board, the Shape of Which is a Segment of a Triangle

TO THE EDITOR:

Pleasant Lake, Ind.

In the September issue, W. F. King wanted to see this problem worked out: A board is eighteen feet long, six

inches at one end and sixteen at the other. Where would it be cut in two so that each piece has the same number of square inches? This is the only way I could think of to work it. That is by proportional right angle triangles.

Let $b c e g$ be the board. Find $d f$. Produce $c b$ and $e g$ to meet at a . Since triangles $a g b$ and $a e c$ are proportional $ab:ac::6:16$.

Substituting y for $a b$ and $y + 216$ for $a c$, we find $a b = 129.6$ inches. Now one-half of board equals 1,188 square inches. Area of triangle $a b g = 388.8$ square inches. Then 388.8 square inches $+ 1,188$ square inches $= 1,576.8$ square inches $=$ area of triangle $a d f$. Then triangle $a c e = 1,576.8 + 1,188$ square inches $= 2,764.8$ square inches. $A c = 345.6$ inches. Now area of triangle $a d f$ is proportional area of triangle $a c f$ as the square of their bases. Then we have the equation substituting x for $a d$, $2,764.8 = 1,576.8 \div (345.6)^2 \div x^2$.

By multiplying and extracting square root we find x or $a d = 260.99$ inches. $A c = 345.6$ inches. Then $a c - a d$ or 345.6 inches $- 260.99$ inches $= d c$ or 84.61 inches. Therefore board $b c e g$ must be cut at $d f$ 84.61 inches or 7.732 feet from $c e$. By the same method I found the width of board at $d f$ which is 12.08 inches.

If any one has a different method than this, I would like to see it in the AMERICAN BUILDER. I am anxious for these columns each month. Every one is a helper.

FELIX MCGREW.

Editor's Note—Albert L. Randall, Amarillo, Tex.; E. W. Koering, Vineland, N. J., and Herman Lincke, Mitchell, Ia.; also solved Mr. King's problem. Limitations of the Standard typesetting machines prevent their publication, however, as it would be necessary to show geometrical signs.—THE EDITOR.



How to Get Roof Pitch with Steel Square

TO THE EDITOR:

Fairview, Pa.

I am submitting the following solution of the brace problem of S. M. Doyle in the correspondence department of AMERICAN BUILDER:

Referring to the sketch it is clear by using 12 and 12 on square and laying over three times, in usual manner, we will come even with top of plate; the work line of brace being three feet from edge of side plate will give (at 8 inch

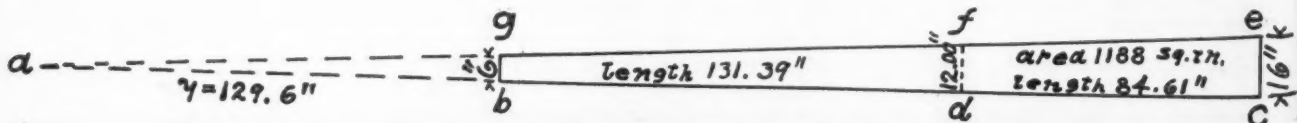


Diagram Showing How Felix McGrew Worked Out the Problem of W. F. King.



"The Upson Company was the first to recognize the carpenter"

Test Upson Board!
Prove its superiority



1. Whittle or saw it! It looks, feels and works like lumber.



2. Break it! It's nearly twice as strong as other boards.



3. Paint it! One coat on Upson Board does the work of two on other boards.



4. Official Government testing machine proves Upson Board withstands breaking test of nearly 400 pounds to the square inch.



5. Approved stretching machine shows Upson Board has nearly twice the tensile strength of average boards.

THE double page Upson ad shown above appeared in last month's issue of practically every building and carpenter publication in the land.

Did you stop to realize what it means to you for a manufacturer to specifically recommend the services of the builder and carpenter?

The Upson Company boosts the carpenter.

Most wall board manufacturers, however, say that "anyone handy with a hammer or saw" can apply their product.

But every Upson advertisement advertises YOU. It is our policy to see that the carpenter gets all the Upsonizing business and profits possible—and that his business steadily grows.

Why carpenters should prefer Upson Board.

Any carpenter who has ever used Upson Board will tell you that it

looks, feels and works like lumber—that he can put up a third more in a day than he can of other boards—that it stays flat on the walls when other boards pull from the nails, buckle or sag—that he prefers to use and recommend Upson Board because it gives uniformly good results. And our advertising emphasizes the difference between dependable Upson Board and other less responsible boards.

Nearly twice as strong as other boards.

Impartial tests upon the Mullen tester, the official testing machine used by the United States Government, prove that Upson Board will stand a pressure of about 375 pounds to the square inch, whereas other boards break at from 220 to 240 pounds.

It is the long, wiry fibers of better quality plus the scientific Upson processing that makes blue-center Upson Board different from other

boards—that makes it the most dependable board made in America—that gives it the wonderful record of less than one complaint to every 3,000,000 feet sold and used.

And Upson Board has a splendid painting surface which ordinarily cuts the cost of painting \$5 to \$15 per thousand square feet as compared with the ordinary board.

The nearest perfect lining.

Wallboard is unquestionably better than lath and plaster for walls and ceilings in every building, new or old, and Upson Board is the nearest perfect wall board.

Send for a sample today and be your own judge as to whether or not Upson Board is the strongest, stiffest and most dependable board on the market. It will help you to build a permanent, increasing wall board business.

Address the Upson Company, 60 Upson Point, Lockport, N. Y.



Made by the
Fibre Board
Authorities

UPSON
PROCESSED
BOARD

The Upson
Company
Lockport, N. Y.

THE DEPENDABLE BOARD WITH THE FAMOUS BLUE CENTER

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per foot) 18 inches of rise from point where brace cuts the plate to work line on rafter; therefore, taking 18 inches and 18 inches on square and laying off on brace will bring heel of square to workline on rafter and the work line on brace will be 18 inches on a horizontal line to left and 9 inches below work line on rafter; again, laying off on brace using 9 inches and 9 inches on square will again put heel of square to work line of rafter and be 9 inches horizontally from work line on brace; continuing in this manner until figures on square become zero, in this case taking one-half of former figures on square, until the imaginary work lines on rafters and brace meet; then mark along blade of square at this point, which will be a horizontal line. Now lay square on this horizontal line, as shown, with 12-inch mark on square with workline on brace and mark the 6-inch point at tongue of square, then a line thru these two points which will be the top cut of brace and add on above this as much as the heel of rafter is above the work line.

This will work out correctly for any pitch of roof, all one needs to do is to keep track of their imaginary work lines and their runs, using even figures on square corresponding with pitch of roof.

If Mr. Doyle will use the method for making hopper cuts he need not experience any difficulty in the mitering of his troughs; there are many methods for laying out miters in hopper or flaring work.

T. WOODS STERRETT.

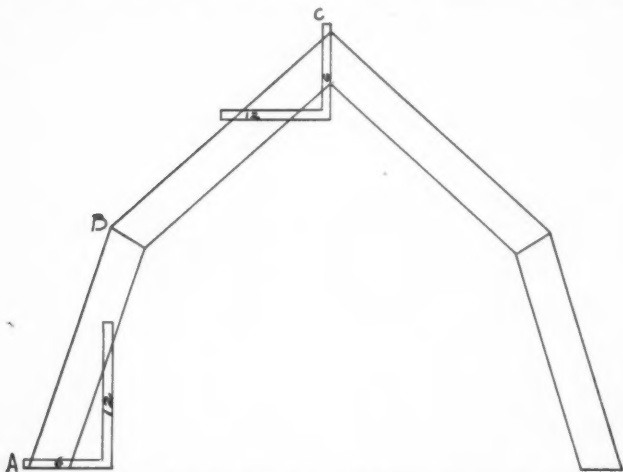
Editor's Note—Others who submitted answers to Mr. Doyle's query were: W. H. McKeehen, Cherryvale, Kan.; N. Wesselmann, Dodgeville, N. Y.; Charles Morrison, Sharon, Pa., and N. S. Grove, Penbrook, Pa.

Getting Hip Cuts with Steel Square

TO THE EDITOR:

Massena, N. Y.

I am sending a rule for getting the hip cuts for hip roof barns that I saw a brother carpenter ask for in the July number and I have a few more ideas I would like to send in



Showing How to Get the Hip Cut of Rafters with the Steel Square by the Method Used by A. Brinck.

when I have time.

Referring to the sketch: To find the cut of rafter at E, I find the easiest way is by degrees, as there is only 90 degrees in the whole 3 cuts. By adding the degrees at A and C and taking them from 90 would leave the degrees in B. For example, if the plate cut was 12 on $6\frac{11}{12}$ and the ridge cut was $4\frac{3}{4}$ on 12 that would be 12 on $6\frac{11}{12} = 30$ degrees $4\frac{3}{4}$ on $12 = 20$ degrees

50 degrees

Fifty degrees from 90 degrees would leave 40 degrees to divide between the other two cut at B. Therefore B would each have 20 degrees or cut $4\frac{3}{4}$ on 12.

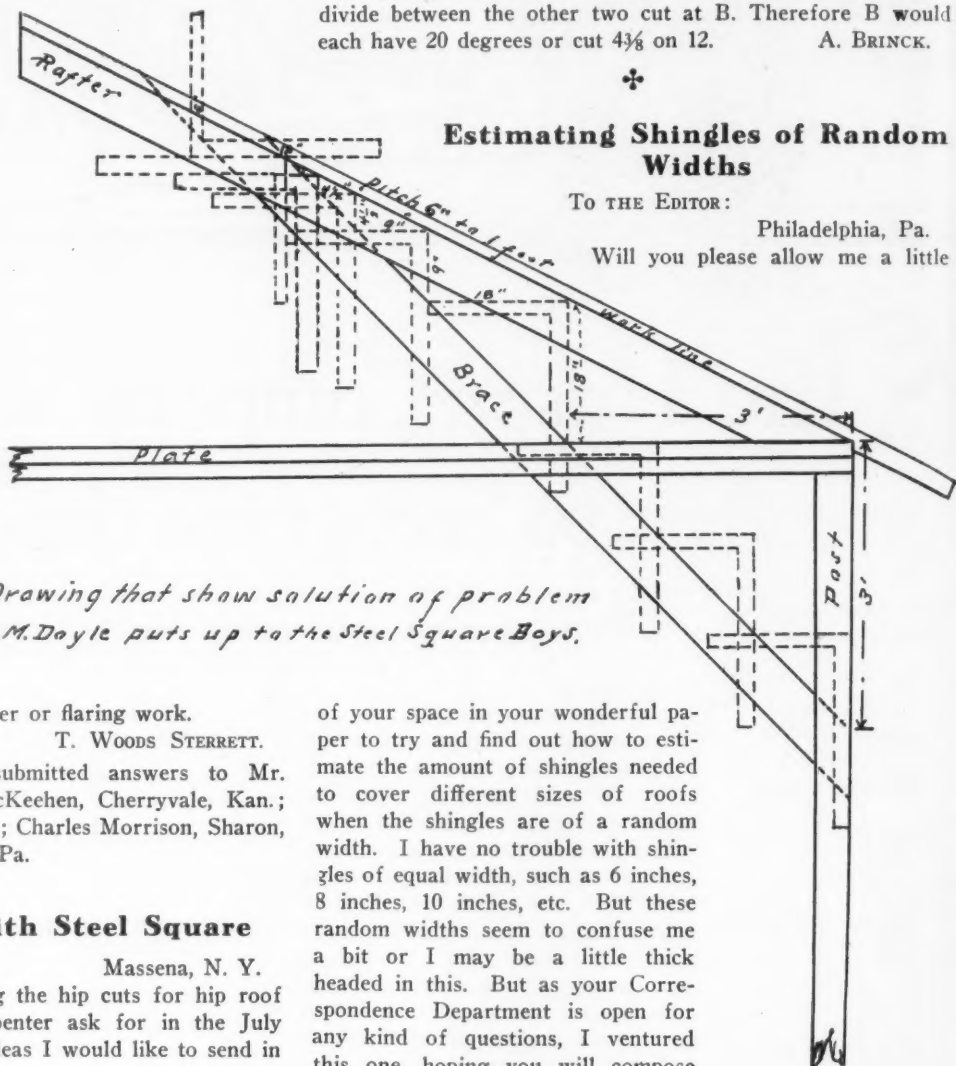
A. BRINCK.

Estimating Shingles of Random Widths

TO THE EDITOR:

Philadelphia, Pa.

Will you please allow me a little



of your space in your wonderful paper to try and find out how to estimate the amount of shingles needed to cover different sizes of roofs when the shingles are of a random width. I have no trouble with shingles of equal width, such as 6 inches, 8 inches, 10 inches, etc. But these random widths seem to confuse me a bit or I may be a little thick headed in this. But as your Correspondence Department is open for any kind of questions, I ventured this one, hoping you will compose this to bring out the object in view.

Thanking very kindly I will look for this in your next issue. I like to read the correspondence department very much, as it brings out the different ideas of the mechanics in the trade, altho some may seem very absurd. But that I think is the life of an argument.

C. W. BAKER.

Wants Method of Estimating Stucco Work

TO THE EDITOR:

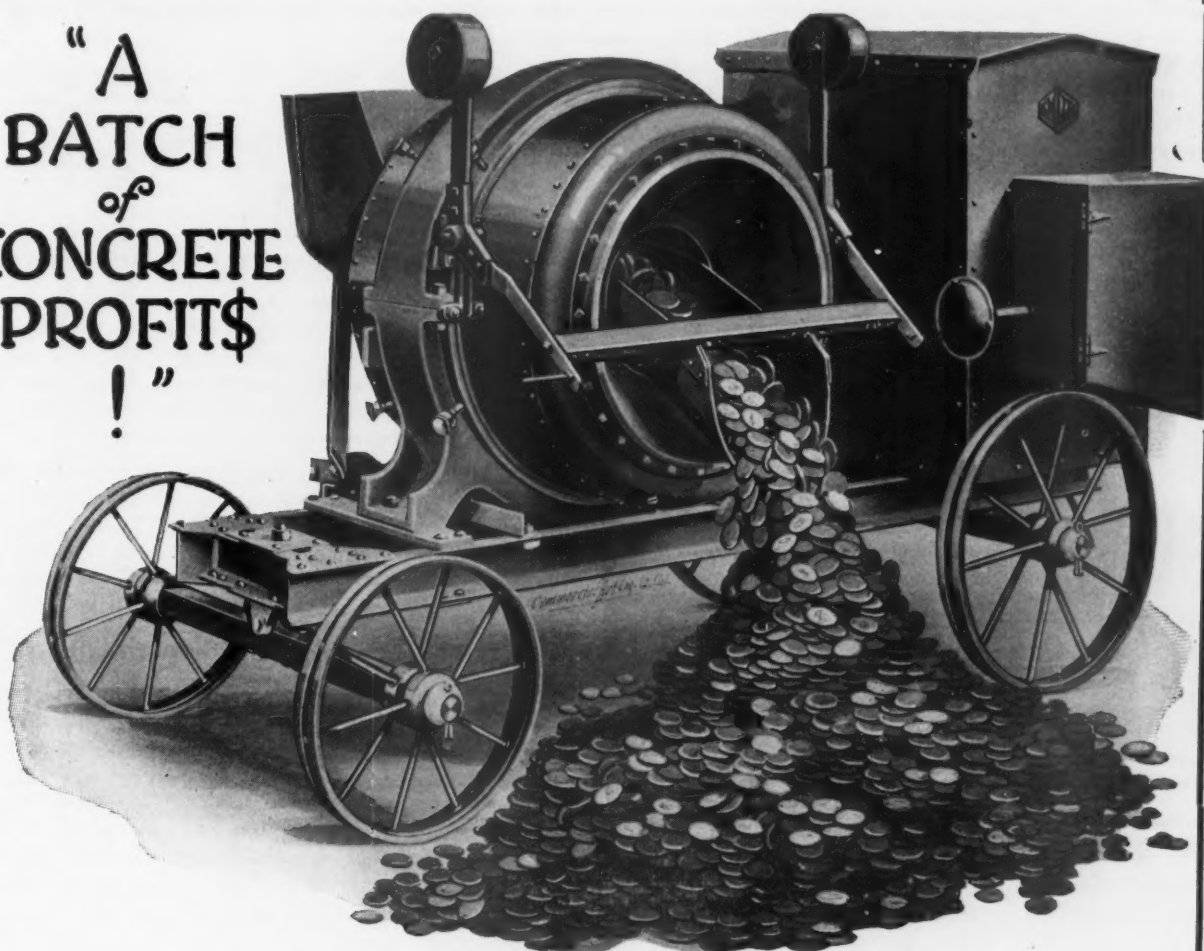
Montreal, Que., Can.

I have been in the contracting business for a number of years doing most all classes of work, but for the past while back I have lost several jobs, the architects claiming that my tender was too high. Now to check my figures I am going to call on AMERICAN BUILDER readers.

What is the actual cost of stucco work on a plain front with square opening, mixture 1 to 3 with a little asbestos

\$—A DOLLAR SAVED IS A DOLLAR MADE—A DOLLAR SAVED IS A DOLLAR MADE—\$

"A
BATCH
of
CONCRETE
PROFITS
!"



This, a veritable MINT, is the popular SMITH MIXERETTE—

On Trucks with Gasoline Engine and Power Loader.

The Smith Mixerette is a high quality small capacity mixer, built for small jobs such as silos, culverts, sidewalks, curb and gutter, etc. It is also used extensively by industrial plants who do their own concrete work, and by large contractors for their small jobs and for finishing up their large jobs.

The Smith Mixerette will easily turn out 50 cubic yards of mixed concrete in a day with a small crew. Its capacity per batch is 4 cubic feet of mixed concrete, or 6 cubic feet of loose unmixed material.

Write Today For Descriptive Matter.



The T. L. Smith Company

3187 W. Hadley Street

Milwaukee

Wisconsin



\$—A DOLLAR SAVED IS A DOLLAR MADE—A DOLLAR SAVED IS A DOLLAR MADE—\$

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

fibre added? This work is on brick work, with raked joints well wetted down before applying and is $\frac{5}{8}$ inches thick. Cement costs 78 cents per bag delivered. Sand costs \$1.75 per ton delivered. Plasterers' wages 60 cents per hour, laborers' wages 40 cents per hour. I would appreciate this information very much as it will be of great benefit to me in figuring. Also state about how many square yards a plasterer should apply in a day of eight hours.

FRANK J. MADIGAN.



Builds Good Gambrel Roof Barn

TO THE EDITOR:

Fort Branch, Ind.

Enclosed find check as per slip for the AMERICAN BUILDER,



Gambrel Roof Barn Erected by Fred W. Wehmer, Fort Branch, Ind.

which is a great paper to have. Could not do without it. Also find picture of one of my gambrel roof barns which I have quite a few of in Gibson county. FRED W. WEHMER.



How to Construct Silo Roofs

TO THE EDITOR:

Adele, Iowa.

I see by the Correspondence Department that Fred Fick has a silo to roof, and as I have roofed two clay block silos the way he contemplates, I think I know something about them.

The way I would fasten the roof on is as follows:

Drill holes thru the wall, one for every rafter, and wire rafters to bolts for the inside and outside.

The first roof should have a run of 2 feet 4 inches and a rise of 4 feet 8 inches, and the second roof should have a run of 4 feet 8 inches and a rise of 2 feet 4 inches, or take one-sixth of span for base and one-third for rise and reverse same for second roof.

Your rafters will be about 13 feet long, allowing 18 inches for lookouts. Use fourteen rafters and space them 3 feet 2 inches almost apart or 3 feet 6 inches at bottom of lookout and one foot 10½ inches at break. Three feet 6 inches plus 1 foot 10½ inches equals 5 feet 4½ inches. Five feet 4½ inches divided by 2 equals 2 feet 8¼ inches, the average width of each section of first roof. Two feet 8¼ inches times 7 feet, the length of first rafter, equals almost 18 feet. Nineteen times 14 equals 266 square feet in the first roof. One-half of 1 foot 10 inches equals 11¼ inches, the average width of each section of upper roof, times 6 feet, the length of the upper rafter equals 6 square feet, in round numbers, times 14 equals 84 square feet. Two hundred sixty-six plus 84 equals 350 square feet of sheathing, or 3½ squares. Sixteen asphalt shingles laid 4 inches to the weather. I built my scaffold on top of silage and worked from the inside. I used the 8 by 12½-inch shingle and split them in the middle for the hips.

Cut your rafter lookout of equal lengths, and when all are set reach over and nail on a facer, then about three sheathing boards and then start your shingles and bring up the hips as you come.

The ones I built had a dormer on one side, with a window in it and I finished up on top of dormer and came off the roof thru dormer window.

Hope my experience will do you some good.

PAUL L. BATTON.



Asks Co-Operation of Advertisers

TO THE EDITOR:

Cook Mills, Ill.

I have been a reader of your valuable paper for about four years and find your advertising equally instructive with the pure reading matter. Both have helped me to build better buildings and to acquire in my community a reputation as a progressive builder.

I am now starting a carpenter shop in my town and would like samples and literature of your advertised building products which I will endeavor to use in the buildings I construct, and as I haven't time to write to each of them singly I thought I might ask you to do it for me. L. H. HART.



What Size Should Chimney Flue Be?

TO THE EDITOR:

Orlando, Fla.

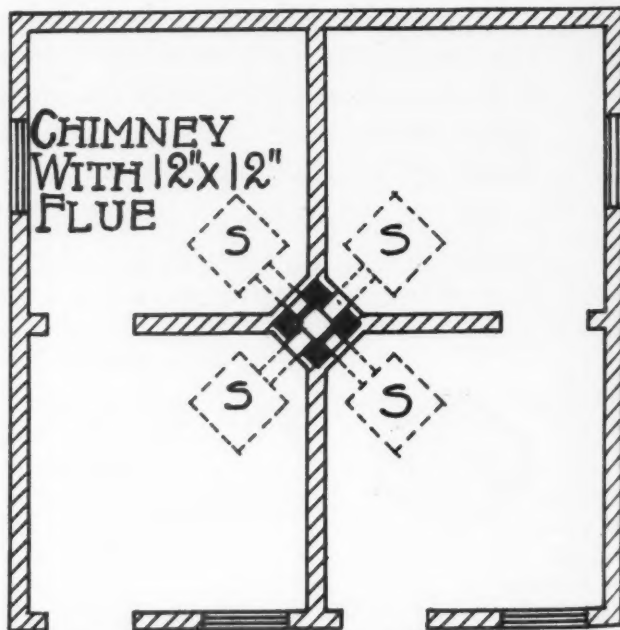
I am to build some four-room apartments for colored people. All four apartments will use one chimney. Thus this chimney will be the outlet for four stoves on the ground floor and four stoves on second floor or eight stoves in all. Each stove will discharge into the chimney thru an eight-inch pipe. On the supposition that only four of the eight stoves shall burn at any one time please tell me the required dimensions for inside of chimney. Thank you.

C. S. McMAHAN.

Answer—We would suggest that you make the chimney with a 10x12-inch flue or, preferably, a 12x12-inch flue. This would take care of the number of stoves mentioned in your letter.

We note that you speak of 8-inch pipe. The standard size pipe for stoves is six inches.

The chimney should be set so that each of its four faces



The Proper Chimney for a House to be Occupied by Four Families, as Described by C. S. McMahan.

"Built Just Before the War"

***This Well Planned Six Room Home
of Beautiful Brick
Cost Less Than Three Thousand Dollars***

This attractive six room home of Brick won first Prize in a country wide small residence competition, conducted by the "American Builder," just before the war.

The competition requirements called for photographs and floor plans of houses which had actually been built, costing \$3,000.00 or less was open to ALL CLASSES of building materials.

Award was made on architectural appearance, interior arrangement and economy of construction.

Hundreds of photographs and floor plans were submitted from all parts of the country, but brick scored the signal victory. It won First Prize.

Send for Free Folder of Floor Plans

We would like to send you, without cost or obligation, an illustrated descriptive folder of this prize-winning home

This folder contains floor plans, interior views and an itemized account of the pre-war cost. It is so complete that any contractor can figure the present cost of this home locally.

**The Permanent Buildings Society
Chamber of Commerce, Chicago, Ill.**



THIS COUPON GETS FREE FOLDER OF FLOOR PLAN

**THE PERMANENT BUILDINGS SOCIETY
Chamber of Commerce, Chicago, Ill.**

Gentlemen:—Please send me Free Folder of Floor Plans of Gates' Prize Brick Bungalow offered in August issue of American Builder. I am also planning to build.....

Give name of lumber and building material dealer

(YOUR NAME)

(YOUR TOWN)

(YOUR STATE)

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

are diagonally across the corners of the rooms. This will give you better openings for your stove pipe.—THE EDITOR.



Want Manufacturers' Catalogs

TO THE EDITOR: 7900 Frankstown Ave., Pittsburgh, Pa.

Give my name to any firm that is sending out catalogs or pamphlets pertaining to the building material or general building contracting.

ROBERT J. BELL.

TO THE EDITOR:

Rayville, Pa.

I have opened a new architect office, and would be pleased to receive catalogs from your advertisers in structural lines.

F. W. JONES.



Will Our Readers Help Mr. Keen?

TO THE EDITOR:

Ashland, O.

Have been a reader of AMERICAN BUILDER for several years. Would like suggestions for newspaper advertisements for a contractor and builder who also builds to sell.

RAY V. KEEN.



Wants Method of Handling Large Plate Glass

TO THE EDITOR:

Johnstown, N. Y.

Would like to ask for some good methods of lifting in and out large plate glass windows of store fronts.

A. E. FASSETT.



Finish on Oak Floor Becomes "Muddy"

TO THE EDITOR:

Oshawa, Ont., Can.

Would some of the readers tell me how to refinish an oak floor and what was the cause of it to get so dull and muddy looking. The rest of the rooms I laid at the same time are just as bright now as when I laid them.

The floors were filled and waxed and the owner told me she cleaned this floor with gasoline. Would this be the cause of the trouble? If so, what is the best method to use to get it back to its natural shade.

D. FARKER.



Getting Cripple Rafter Cuts

TO THE EDITOR:

Council Bluffs, Ia.

Side cuts of cripple rafters are obtained by developing the superficial shape of that part of roof. Hence the side cut of cripple, for K. P. of Riddlesburg, Pa. Take length of cripple on blade, length of ridge from cripple to old house on tongue, blade is cut wanted, tongue is for sheathing.

CORN FIELD CARPENTER.



What Can Be Done to Break Echo in School Auditorium?

TO THE EDITOR:

Clara City, Minn.

I am a reader of the AMERICAN BUILDER and take the liberty to ask you what can be done to remedy a resound or echo in our school auditorium. In other words, we have too much sound for speaking, and hard to hear and understand a speaker. The walls are brick and hollow tile, with a maple floor.

C. E. THOLEN.

Oct. 7, 1919.

Answer: The problem of eliminating echoes from an auditorium is a difficult one, and one that requires special treatment for each individual case. It formerly was thought that by stringing a few wires a foot below the ceiling they

would break the sound waves and prevent echo, but scientists now say that wires do no good. Others use the method of hanging flags or something of that sort from the ceiling. You know that an empty room has more echo than one that is filled, and often times the placing of furniture will break the echo.

EDITOR.



Wants Walnut for Phonograph Cabinet

TO THE EDITOR:

Barnard, Minn.

I wish to build my own phonograph cabinet but don't know where to obtain a wood that I desire.

Can the publishers of AMERICAN BUILDER advise me of some company or dealer in hardwood from whom it would be possible to secure genuine walnut wood for such purpose? If so, shall appreciate very much if you will furnish me name and full address of such dealer.

J. E. JOHNSON.



How to Determine Charge Per Day for Use of Equipment

TO THE EDITOR:

Dublin, Ohio,

As a reader of the AMERICAN BUILDER I am going to take advantage of your Information Department and get some good advice.

I have just bought a No. 3 C. H. & E. saw rig, mainly thru your columns, and I want to know what kind of a charge basis I will have to put it on to make it pay a profit to me in doing work by the day. The wage scale here for country carpenters runs from 65 to 75 cents per hour.

I have a great deal of work promised ahead for 1919 and 1920 and if you will help me with your experience I will be very grateful.

W. R. DAVIS.

Answer—The usual method of determining the charge per day for work such as you describe is to reckon your expense, plus interest on your investment, plus depreciation of equipment, plus the profit that you believe your machine ought to earn, based on the cost of doing business. Under expense, we would reckon the wages of the laborer, the cost of the power, which would include gasoline, oil or oil and electricity; under depreciation, a certain percentage of the cost of the machine to be determined by the number of years you can expect it to remain in operation.

By using this method, you will arrive at a figure fair to yourself and fair to the man who employs your equipment.

We are glad to know that you have a great deal of work promised ahead and hope that it will be profitable.—THE EDITOR.



How Arthur Fay Built His Shop and Business

TO THE EDITOR:

Kimberly, Idaho.

I sure enjoy reading the AMERICAN BUILDER, so think I



Arthur H. Fay's Carpenter Shop, Kimberly, Idaho.

KELLASTONE

IMPERISHABLE STUCCO



Distinctiveness in Architecture

Something unusual—construction that's distinctive—that is what builds a contractor's reputation, and keeps profitable business coming his way. But he can't go far with his plans without taking the cost into consideration.

In these days of high prices of building materials it is more than ever essential that building construction combine economy and durability with artistic beauty. The real fulfillment of building ideals in these respects will be found in

KELLASTONE

IMPERISHABLE STUCCO

From a standpoint of both cost and distinctiveness KELLASTONE qualifies for every type of building. While maintaining its preeminent quality as the original, all-mineral magnesite stucco, its cost has risen less than 12% since 1913.

The artistic possibilities with KELLASTONE are unlimited. It bonds perfectly with any surface over which applied; will not crack, chip or crumble like ordinary stuccoes. Fire and water-proof; a perfect insulator against heat and cold.

KELLASTONE instantly appeals to all classes of builders—it affords you exclusive talking points without number. Ask us to tell you the details of our co-operative selling campaign.

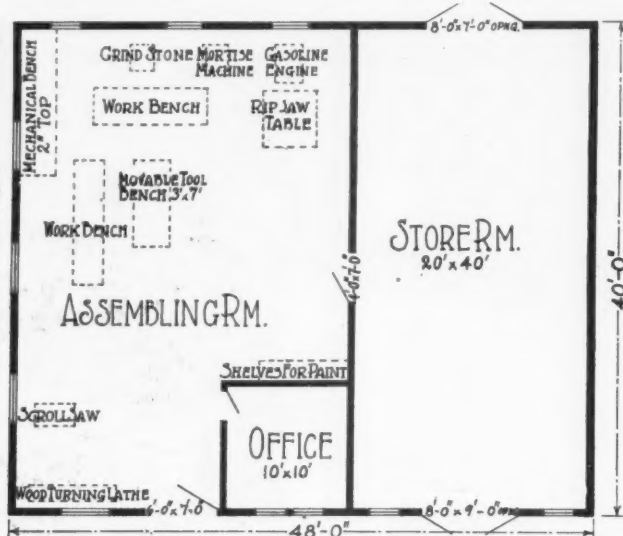
NATIONAL KELLASTONE COMPANY
1315 Mallers Building Chicago

will contribute an article on my work.

In 1915 I built a shop 6 by 12 feet on skids. I used it till June, 1918, when I bought a good substantial frame building 20 by 40 feet with a two-inch plank floor.

In August I bought two lots near the center of town with an old livery barn on them. I wrecked the old barn and got about 8,000 feet of good lumber out of it. I moved my first building to my lots and used the old barn to build an addition 28 by 40 feet. Well I got the building but no roof.

Then I bought a third old building 24 by 40 feet. It had



The Layout of the Woodworking Shop of Arthur H. Fay, Showing How the Equipment Is Placed.

a good shingle roof. I wrecked it all except the roof, which I put on my shop, making a quick job of roofing.

My room, 28 by 40 feet, is used for work room and office. The other room I use for a store room.

I used new rustic for the front, and have a good looking building 48 by 40 feet. The front is 20 feet high.

I use the room 12 by 40 feet on the second floor for storing light articles.

I have a 2¼ H. P. gasoline engine to run my rip saw.

I also have a foot power mortise machine and scroll saw.

A bench on wheels, containing several shelves to keep my hand tools on. I have an auto with a small truck body on it with my advertising on both sides and both ends, and everybody takes notice.

I had a lot of posters the size of sale bills, and tacked them up at cross roads. One of them that I posted twelve miles out got me a \$45 order for screens. It surely pays to advertise.

I turn out only first-class work and even tho it costs a little more it pays in the long run.

I made two tables for the high-school laboratory, each table 4 by 12 feet with maple flooring top, and accommodating 12 pupils. I made each table in two sections and moved them to the building and put the top on there.

I started in the carpenter business eight years ago, worked for a fine carpenter two years, then came to Kimberly and started in for myself and give my personal attention to all jobs.

ARTHUR H. FAY.



Discretion

"I noticed you refused to comment on the Irish question."

"Yes."

"Why?"

"There was a man in the crowd named O'Flaherty."—*Birmingham Age-Herald*.

Hollow Building Tile Construction

(Continued from page 104.)

quently, where stone or gravel is not at hand, the mason will find it more convenient to use cement mortar instead of concrete for the filling of lintels. The same mortar mixture that is being used for the setting of tile may be used for this purpose, providing it is not leaner than a 1-3 P. C. mortar. A little more water should be added so that it can be poured and the cells filled properly.

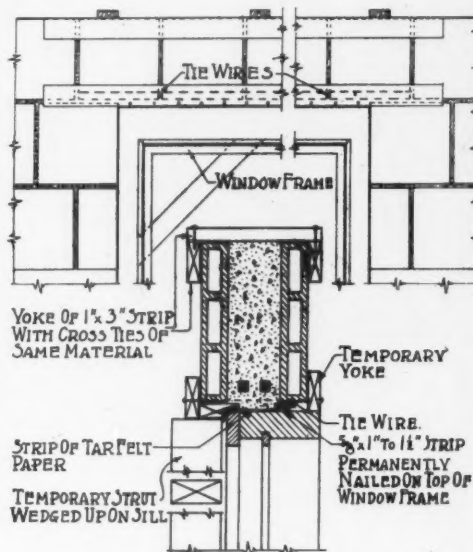


Fig. 4. Details for Temporary Form Used for the Building of Lintels Shown by Fig. 3-B.

A temporary form is required for the building of Fig. 3-B lintels, which can be made of a few strips of wood and set up as shown by Fig. 4, the same form being used over several times, as it only need remain in place for a short time in good drying out weather.

The heads of frames should always be braced against sagging by the nailing on of temporary diagonal braces, where the load of wet concrete is deposited on same; it is also important that the tile be securely yoked together in the manner shown by Fig. 4, as otherwise they may be pushed out of place when the concrete is poured in between same. The tile should, of course, be set a few hours before the concrete is poured, and it is always advisable to lay a strip of tar felt on top of the window frame to avoid swelling or warping from the absorption of water from the concrete.

The next article will continue this subject, and the method of fixing lintel heights for various openings will be given.



IN warm weather, all hollow tile, whether dense or porous, should be well wet or water-soaked before laying. In freezing weather they must be kept dry.



MORTAR for setting porous hollow tile should never be made of cement and sand alone, as such mortar is too "short" and rolls off the tile and does not insure a full joint.

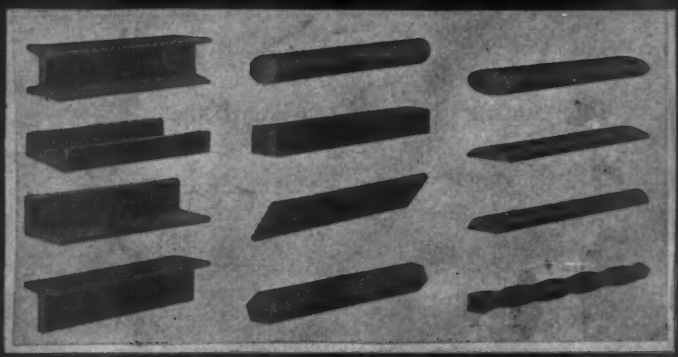


The Idea

"He has a face that would stop a clock."

"Maybe that is what made the clock strike."—*Baltimore American*.

STEEL FOR IMMEDIATE SHIPMENT



Don't hold up the job waiting for steel!
Don't pay higher prices than are necessary!
Buy direct from Ryerson and save time and money.

For over seventy-five years Joseph T. Ryerson & Son have furnished the manufacturers and builders of the country with immediate shipments of iron and steel.

Thousands of contractors every day are taking advantage of this reliable source. Send us your next inquiry or order. You will be pleased with the results.

Clip the coupon for Steel Guide.

ESTABLISHED 1842 JOSEPH T. RYERSON & SON

CHICAGO PLANT . . . 2550 W. 16TH ST., CHICAGO, ILL.
ST. LOUIS PLANT . . . 2200 NO. 2ND ST., ST. LOUIS, MO.
DETROIT PLANT . . . 460 EUCLID AVE. E., DETROIT, MICH.
NEW YORK PLANT . . . 31 CHURCH ST., NEW YORK CITY

J.T.R.
& Son.
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Please send
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each month.
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Address

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

How to Build a Window Ice Box

By R. Newbecker

IN summertime the ice box is a necessity, and, as a rule the carpenter is busy; in wintertime the carpenter is not so busy, and here is an article, if properly pushed in each city or town, should provide enough work to keep the carpenter's spare time well occupied.

The construction of this article is of the simplest nature, as the commonest of lumber or old boxwood can be used in its construction. Furthermore, the demand for an article of this kind already exists and all the carpenter has to do is to go after it. And that is the demand for a window cold box, for the convenient storage of food during the cold season of the year. As the expense of using the ice box during the winter months is done away with by the majority of the city dwellers, an article of this kind, if neatly constructed and handsomely painted with dark green paint, will be readily appreciated.

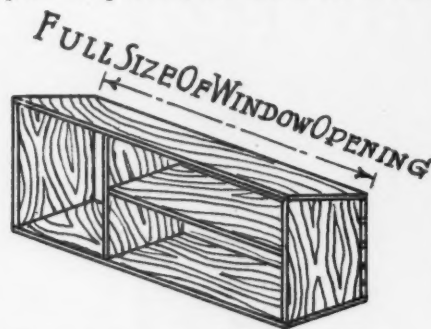
Some advertising in the local papers setting forth the saving as well as the convenience of having a window sill cold storage box, and bringing its good points out properly ought to bring in the orders, to keep you busy in the dull time.

As before said, the construction is of the simplest, it being really nothing more than the construction of an ordinary box fitted in the window sill and most always made the full width of space between window frames on the outside.

Illustration No. 1 shows a complete view of the box ready for placing on window sill. It will be noticed that a partition is placed in one end of the box to allow for placing of milk bottles, ice cream, etc., while a shelf is pulled across the balance of space from partition to other end.

Illustration No. 2 shows the dimensions in height and width, and also shows a wooden bracket which is attached to sill and balance of bottom of box protruding over the sill to strengthen the hold of the same. A table oilcloth curtain is also attached to the front or

open end of the box, while the rear end, or the end showing on outside, should have at least four openings from $\frac{1}{8}$ to $\frac{1}{4}$ inch in width, but not less than $\frac{1}{8}$ inch to permit free circulation of the air in the same. The top piece should, if possible, always be made of one piece to prevent the entrance of rain inside the same.



GENERAL VIEW OF WINDOW COLD BOX

How the Finished Cold Box Looks.

The box should be attached to window sill with screws to permit easy removal in spring. The thickness of lumber best adapted for this box would be $\frac{3}{4}$ inch for ends and back. The back can be made from four or more pieces of narrow stick, as before stated. Opening must be provided for the entrance of the air, the partition inside can be $\frac{1}{2}$ inch thick stock, while the shelf may be of $\frac{5}{8}$ or $\frac{3}{4}$ inch stock. The top and bottom should be $\frac{7}{8}$ inch stock, but $\frac{3}{4}$ inch thick will answer satisfactorily. In fact, the construction is of the simplest and many carpenters, no doubt, will find this a ready selling article if the same is given a fair trial.



CABINET work, or shop work, as it is generally called, is a pleasure to the man who knows his tools and how to handle them. Making furniture in the shop on days when it is not possible to work at the regular job is a profitable pleasure.



A STUDY of what is best in any kind of building that a contractor is called on to erect enables him to give his client a better building. A contractor should not only know how to build a building, but should know how the building should be planned to give the owner the greatest satisfaction. For therein lies his future success.



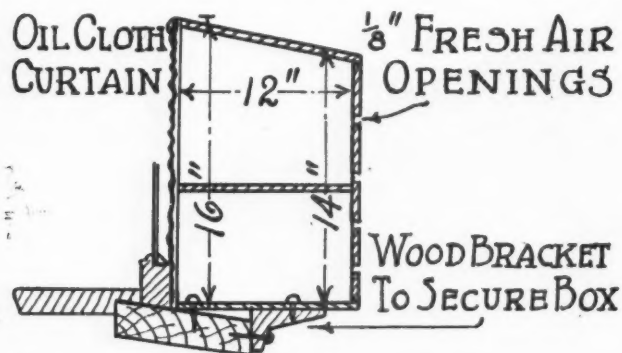
IT is surprising the amount of interest readers show in the problems presented in the Correspondence Department. Working them out for the benefit of fellow members of the AMERICAN BUILDER Family keeps everyone in practice.



In The Old Days

The curtain had just gone down on the first act. "I think I'll go out and get a breath of fresh air," said Mr. Guzzler.

"I wish you'd bring some of it back with you, instead of the breath you usually bring," suggested Mrs. Guzzler.—*Philadelphia Record*.



CROSS SECTION OF WINDOW COLD BOX

Showing Dimensions and Various Openings.

FOR ATTACHING TRIM TO WALLS



GF Peds

PEDS go on walls in two motions—plaster the PED and stick it to the wall. These two motions save many hours of labor.

PEDS adhere tightly to all walls; metal lath, brick, concrete, gypsum block or hollow tile.

PEDS do away with sawing plugs, shaping plugs, digging out mortar joints, driving plugs, sawing them off, nailing on continuous strip and wedging the strip to a straight edge.

PEDS have withstood a direct pull, out from the wall, of *five hundred pounds*.

PEDS never break tile or loosen bricks or make holes in the plaster.

PEDS are made in two styles—WALL PEDS and FLOOR PEDS.

PEDS will save you 50% in your grounding costs.

Let GF PEDS prove their worth on your next job.

THE GENERAL FIREPROOFING CO.



METAL LATH-CONCRETE REINFORCEMENT

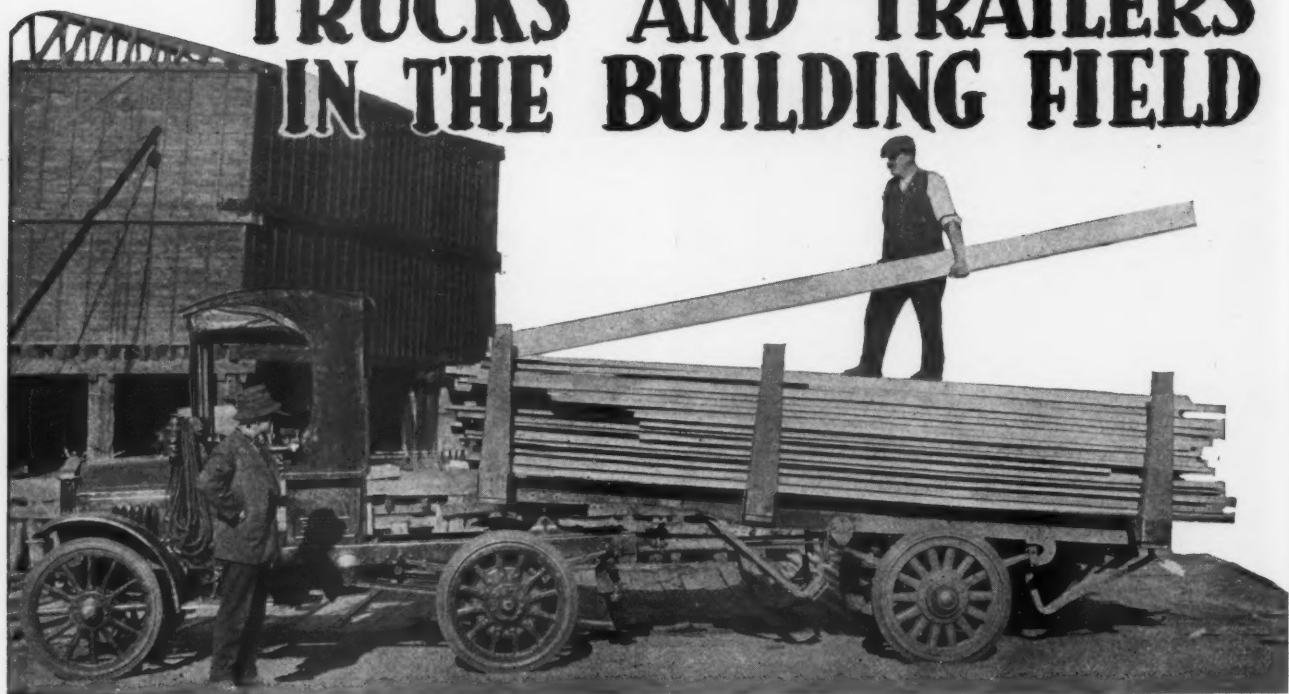
WATERPROOFINGS AND TECHNICAL PAINTS

YOUNGSTOWN, OHIO.



NEW YORK - CHICAGO - PHILADELPHIA - UTICA - BUFFALO -
KANSAS-CITY - OMAHA - DALLAS - MINNEAPOLIS - SAN FRANCISCO

TRUCKS AND TRAILERS IN THE BUILDING FIELD



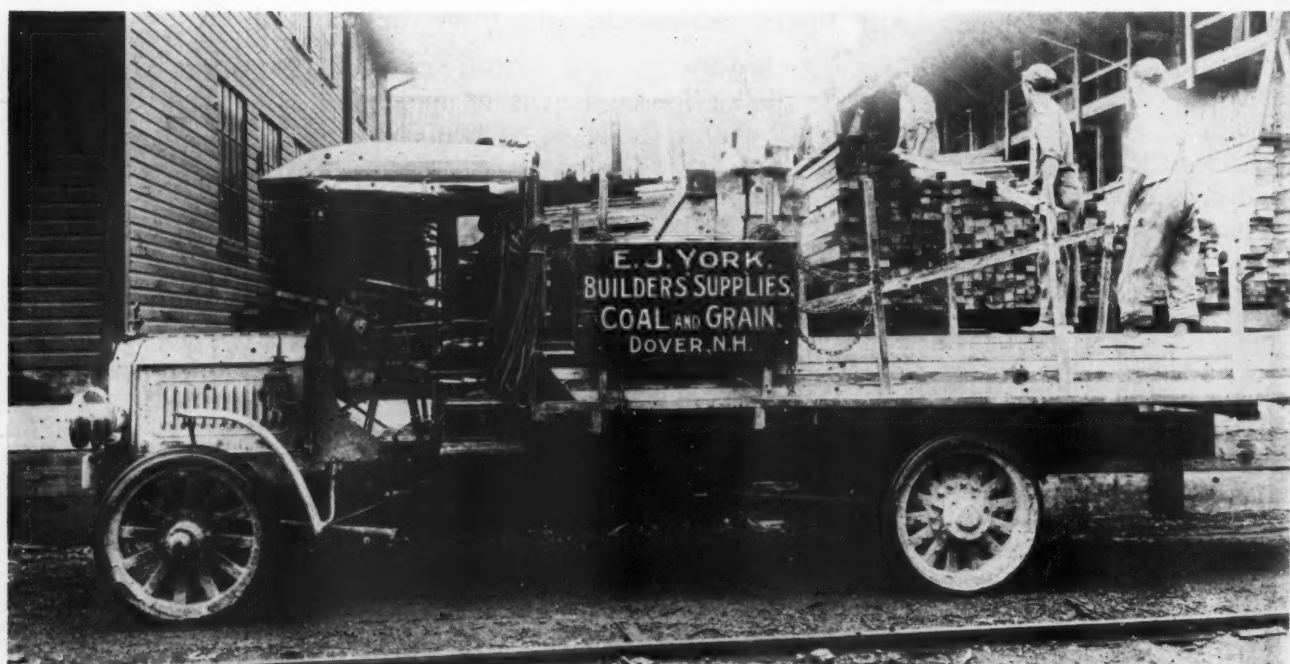
Motor Trucks Respond in Service to Good Care

SOME SUGGESTIONS ON THE OPERATION AND CARE OF MOTORS, ESPECIALLY IMPORTANT DURING COLD WEATHER.

MANY owners do not get the most in service at the least cost out of their trucks because they do not thoroughly understand their motors and how to care for them. Ignorance about the needs of the motor and the various parts of it oftentimes is expensive. And a great many times the engine gets the blame for a lot of things that it is not responsible for. It is a good rule not to blame the motor for all troubles, as it often is some other cause which prevents the motor from functioning properly.

The low grade of fuel being used at the present time invariably results in poor vaporization and excessive carburization. In an effort to secure better results, carburetor adjustment is often attempted, usually resulting in decreased motor efficiency.

It is difficult to vaporize completely the ordinary commercial gasoline. In cold weather, it sometimes is almost impossible to start a motor without first warming up the cylinder jackets or intake manifold. All carburetors are supplied with air chokes which



A View of the Lumber Yard of E. J. York, Dover, N. H., and the 5-Ton "Packard" Truck That He Uses for Deliveries. Mr. York Delivers Lumber to Many of the Towns and in the Rural Section Adjacent to Dover Quickly and at Low Cost.



Contractors and Builders find Stewarts cost less to run

Simplified design saves \$200 to \$300 in first cost

Stewarts are doing wonderful work for Contractors and Builders everywhere. They choose Stewarts because:

The truth—

Stewart design eliminates hundreds of needless parts, thus saving \$200 to \$300 in first cost.

You get a truck with greater strength—fewer parts to wear—less dead weight.

With less weight to move, you buy less gas, oil and fewer tires.

The proof—

One Contractor's Experience:

Answering your inquiry of September 6th concerning my Stewart Truck, I would say that I have found same economical and dependable. Concerning cost of operation on one job in particular which I am now doing is as follows: 1 trip about 5 blocks, average load about 5400, making 22 trips like this a day. The day's work requires about 8 gallons of gasoline and 1 quart of oil.

(Signed) P. F. MILLER, CONTRACTOR,
Easton, Pa.

5 SIZES

$\frac{3}{4}$ ton — \$1195

Electric starter
Electric lights
Magneto ignition

1 ton — \$1650

1½ ton — \$1975

2 ton — \$2575

3½ ton — \$3500

All prices F. O. B.
Buffalo

In five years no Stewart has worn out

Thousands are in use throughout the world—in over 500 American cities, on hundreds of farms and in 27 foreign countries.

Stewart

MOTOR TRUCKS

Stewart Motor Corporation, 428 E. Delavan Ave., Buffalo, N. Y.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Heavy Materials Require a Staunch Piece of Delivery Equipment. Here Is the "Pierce-Arrow" Truck Used by M. A. Reeb to Handle Heavy Loads of Cement.

enable the driver, when starting the motor, to close the air inlet passage. This permits a rich mixture of gasoline to enter the cylinders and makes starting less difficult.

Using the air choke too frequently has a tendency to deposit large quantities of gasoline in the crank case of the motor. If, during cold weather when the motor is running erratically, having a tendency to miss, and to warm up slowly, at the same time lacking power and showing symptoms generally of unsatisfactory operation—if the driver will draw off all the oil in the base, he will find, instead of pure cylinder oil, a solution adulterated with a large percentage of gasoline.

Providing the motor has not been damaged by continued operation without proper lubricant, it should, upon being refilled with fresh oil, show all of its former speed and power. However, if the motor has been operated for some time under the above condi-

tions, it undoubtedly will be damaged permanently.

Resulting Motor Troubles

Destroying the lubricating qualities of the oil brings about many unsatisfactory conditions, for which there is no apparent cause. These conditions are usually difficult for the inexperienced driver to comprehend. Some of the troubles which are a direct result of the impaired qualities of the lubricating oil are the following:

- Hard starting.
- Premature piston wear.
- Premature cylinder wear.
- Premature piston ring wear.
- Connecting rod bearing burning out.
- Crankshaft bearings burning out.
- Excessive gasoline consumption.

Smoking due to the abnormal increase in the height of oil level in the crank case on account of gasoline working into the base of the motor.

- Excessive carbon in cylinders.
- Tendency to overheat due to lack of lubrication.
- Very poor or no compression.

All of the above result in lack of power and poor performance. This diluted mixture tends to soften the carbon and practically makes a carbon-gasoline lapping compound which has a tendency to aggravate the wear already caused by parts running without adequate lubrication.

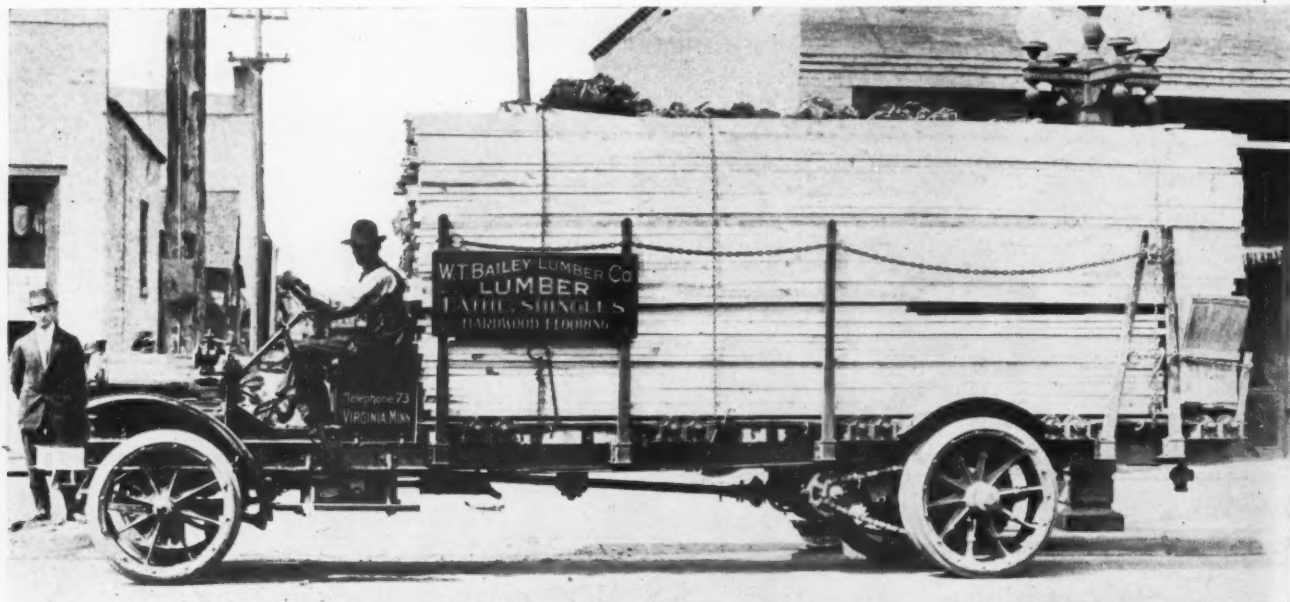
How to Prevent Foregoing Troubles

To eliminate so far as possible the foregoing conditions:

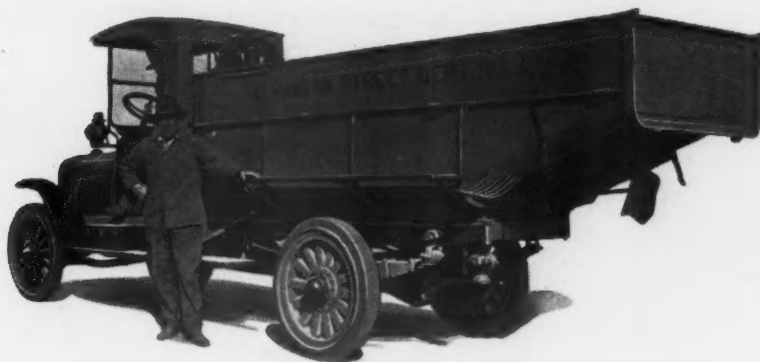
Keep the motor free from carbon.

Replenish regularly the oil supply in the engine base. For trucks in constant service this should be done every week in cold weather, decreasing to once a month in the heat of summer.

Use choke sparingly.



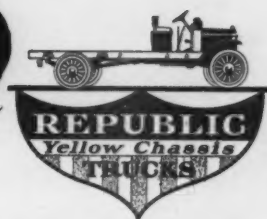
The W. T. Bailey Lumber Co., Virginia, Minn., Used a 5-Ton "White" Truck to Deliver Lumber. What a Large Quantity of Lumber and Other Materials Can Be Carried on One Load Is Shown by the Illustration.



You can't get away from the fact that 60,000 Republic Trucks have been bought by shrewd, sensible business men. Among them will be found a solid conviction that their trucks are not equalled—in *performance*, in *ruggedness*, in *economy*. In six years this preference—based solely on the wonderful Republic record—has made this company the largest manufacturer of motor trucks in the world.

REPUBLIC TRUCKS

Republic Motor Truck Co. Inc., 953 Michigan Avenue, Alma, Michigan



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



The Randolph County Lumber Co., Parker City, Ind., Doubles the Capacity of Its 2-Ton Truck by Attaching a "Trallmobile." "We Are Using Two Trailers, One Behind a 2-Ton Truck and the Other Behind a Runabout, and Haul Materials as Much as 20 Miles," Reports the Company, "and Are Well Pleased with Our Investment."

Do not adjust carburetor to give a rich mixture. This helps in starting, but the excess fuel eventually finds its way to the oil reservoir. Always make carburetor adjustments after the motor has run for some time and is thoroughly warmed up.

Use best grade of gasoline obtainable, especially in cold weather.

Inspect Oil Screen and Oil Pipes

It is common knowledge what will happen to a motor if it is run without oil, but it is also possible for a motor to be ruined with oil pan apparently full of oil. First, it may be so thinned out with raw gasoline as not to possess proper lubricating qualities. Second, the oil screen, or oil feed pipes, may be clogged, interfering with proper circulation. A certain amount of carbon will deposit on inside of piston head which in time will scale off and drop into the oil pan and lodge in the oil screen and oil pump valves. This is another reason why the oil pan should be occasionally drained and cleaned.

The oil screen at bottom of oil pan is very easily removed for the purpose of draining and cleaning, and it will be well worth while to give this point frequent

attention, in order to prevent trouble.

Proper Care of Cooling System

It is also important to see that fan belt is kept properly tightened at all times to insure maximum cooling efficiency from your fan.

The radiator and water circulation system should be drained occasionally and replenished with fresh water. With the coming of fall weather, remember that a water cooled engine must be carefully guarded against freezing. If the water freezes in any part of the system it will cause the breakage of piping or radiator, or crack a cylinder jacket.

When the truck is not operated for several days, during cold weather, the safest plan is to drain the water out of all parts of the system, cocks being provided for the purpose at the lowest point of the water pump and at the bottom of the radiator. The engine should run for a moment to be sure that all the water has been removed.

To prevent the water from freezing when it is not desirable to drain it out, either wood alcohol or denatured alcohol may be mixed with the water. The alcohol mixture is as follows:

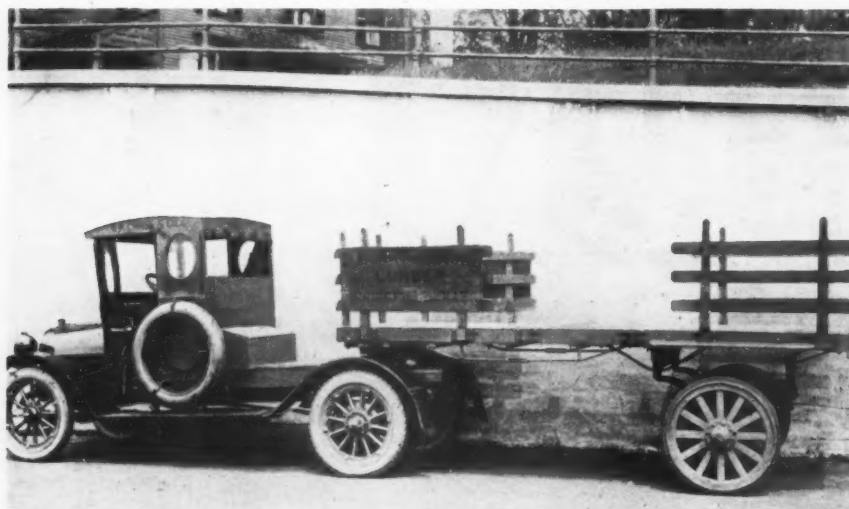
Proper Mixture for the Radiator

For zero weather use 75 per cent water and 25 per cent alcohol.

For 10 degrees below zero use 70 per cent water and 30 per cent alcohol.

For 20 degrees below zero use 60 per cent water and 40 per cent alcohol.

The use of glycerine raises the boiling point of the solution. It is more expensive than alcohol and is slightly injurious to rubber. All things considered, a combination of alcohol and glycerine in water is the most satisfactory.



Showing a Little Truck Transformed Into a Good-Sized Truck Thru the Addition of a "Martin" Semi-Trailer. The Trailer Is Attached to the Platform of the Truck by a Rocking Fifth Wheel, and Can Be Easily and Quickly Detached.

Another
FEDERAL



3 1/2-ton Federal, equipped with hydraulic hoist, operated by Frye & Kaufold at Oklahoma City, Okla.

3 1/2-Ton Federal Truck Replaces Three Teams

It requires a truck of real, in-built stamina to stand up under the heavy duty demands of sand haulage.

That the Federal meets these rigid requirements is evidenced by the splendid service which is being given by the 3 1/2 ton Federal owned by Frye & Kaufold, of Oklahoma City, Okla.

Hauling regularly 40 yards of sand per day, this Federal has replaced three teams and has materially reduced the company's "overhead" in deliveries.

In 100% satisfactory service, consistent performance and low operating costs, Federal motor trucks are establishing an enviable name for themselves among contractors, builders and engineers the country over.

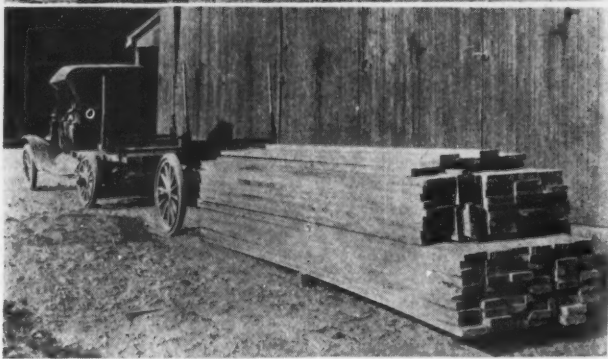
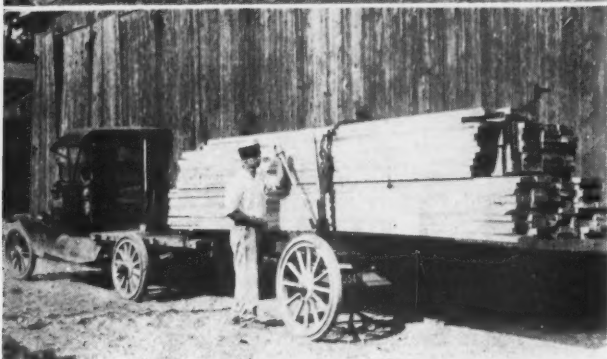
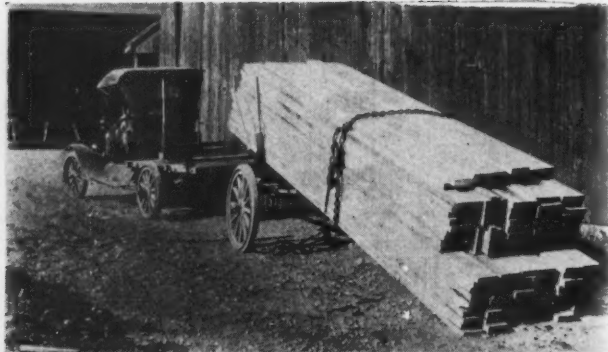
*"Federal Traffic News" Will be
Mailed Monthly on Request*

FEDERAL MOTOR TRUCK COMPANY
79 FEDERAL STREET DETROIT, MICHIGAN

FEDERAL

One to Five Ton Capacities

"Return Loads Will Cut Your Haulage Costs"



Showing How the "Trailer-Truck" Semi-Trailer for Lumber Yards Is Unloaded. Rollers, Operated with Ratchet and Lever, Move the Lumber to the Rear and Off the Semi-Trailer. This Is a Quick and Easy Method of Unloading Lumber.

Do not use a solution of calcium chloride or any other alkaline solution, which is injurious to the metal parts.

If a non-freezing solution is used to any great extent the upper and lower radiator hose should be removed and inspected frequently, as it is possible the solution has injured the inside of the rubber hose to the extent that it is scaling and likely to interfere with proper water circulation. It is cheaper to replace with new hose than to take chances of ruining your motor.

Some Important Suggestions

Study your motor carefully. Familiarize yourself with the interior construction of the motor and the functions of the various parts. The manufacturer of your truck undoubtedly furnished an instruction book, which should be studied carefully.

Thoroughly acquaint yourself with the ignition system and learn how to avoid its most common troubles.

Learn everything possible about the carburetor so that in an emergency you will not be helpless. But do not attempt adjustments that require the services of an expert.

Do not race your motor. Nothing will do more to shorten its life.

Do not start your motor with the spark advanced. Form the habit of retarding the spark whenever you stop.

Keep the oil level above "one-half full" on the gauge.

When you hear a knock try to locate it. Then take the truck to an expert and have this remedied if it is something that you cannot overcome yourself.

Make it a habit to examine water, oil and fuel supply before starting out.

Use the best grade of oil obtainable.

Keep your motor clean within and without. It is well to frequently drain the oil pan and substitute a fresh supply of oil.



Long Poles, Timbers and Other Heavy Pieces of Building Materials Are Being Handled Easily and Economically by the Use of Trailers. Here Is Shown a "Miami" Trailer with a Healthy Load of Piles.

MUTUAL

America's Greatest TRUCK

GREATEST, because it is the only truck that is built *wholly* from units and parts that are themselves the greatest achievements of the automotive industry—and are acknowledged to be such by America's greatest technical and practical authorities.

And it is the greatest, too, because it gives the greatest *truck value* per dollar of price asked.

This value-giving is based on two prime factors:

1st On our building our trucks *over-size*, thruout, so that our *two-ton* Mutual is actually a *three-ton* truck, in engine power, carrying capacity and in the size and dimensions of all its parts. Our $3\frac{1}{2}$ and 5-ton sizes are similarly built for a 50% over-load.

2nd On our policy of being satisfied with *less than half* the profit for ourselves, that is customary with truck companies. For, the Mutual Truck Company is essentially a Community Enterprise, operated with low overhead cost—an enterprise whose prime object is to build up an *industry* at Sullivan, Indiana, that shall employ thousands of men, and thus create an enlarged home market for the farm products, coal, oil and natural gas with which Sullivan County is so richly blest.

We Make Good Our Claim

We realize that we are assuming a grave responsibility in advertising the *Mutual* as "America's Greatest Truck," and that it is only by fulfilling that claim beyond all question that we can realize our ambition and win and hold the permanent good will of truck buyers the world over. Therefore we say:

BUY ONE "MUTUAL"

Put it in your hardest service, and let it make its own place in your esteem.

Send for our Super-Specifications; and let your technical and purchasing managers check them, item by item, against the specifications of the best and highest priced trucks on the market.

MUTUAL TRUCK COMPANY
SULLIVAN INDIANA

Keep the tappets in proper adjustment.

Do not wait until your motor freezes before substituting an anti-freezing solution for water.

Apply the golden rule to your motor and it will outlast the truck.

Keep this information on file for reference. Possibly you may not need it now, but later you may want it pretty badly. By keeping it you will have it, and by applying the suggestions to your motor it will prove more satisfactory, will have a longer life and will be less expensive to operate.

the investment of trucks and of teams and wagons, more than 40 per cent. While we are operating three trucks now, together with one light car, we are sure it would be impossible to handle our business with 20 teams."

Practically all the building in Oklahoma City is carried on at a distance of from two to five miles from the Aurelius-Swanson Company's yard. And Mr. Aurelius points out that one of the chief assets of the yard is its delivery service.

The Aurelius-Swanson Lumber Co. was started just



The Retail Lumber Yard and the Two 2-Ton "Federal" Trucks Operated by the Aurelius-Swanson Lumber Co., Oklahoma City, Okla. The Two "Federals" and the Light Delivery Car Handled \$250,000 Worth of Lumber in 1918, Replacing 15 Teams and Wagons and Cutting the Delivery Costs of the Company 40 Per Cent.

Trucks Reduce Delivery Costs 40 Per Cent for the Aurelius-Swanson Lumber Co., Oklahoma City

IN 1917 the books of the Aurelius-Swanson Lumber Co., Oklahoma City, Okla., showed \$113,000 worth of business. That year the company handled all its deliveries with 15 teams and wagons. The first of 1918 two 2-ton trucks and a small delivery car were put into service. And during that year the company handled \$250,000 worth of business. Thus did three trucks not only replace 15 teams but handled more than twice as much lumber as had been delivered by the teams.

"It would be absurd to think that we can even argue the point as to the cost of trucks and teams, trucks being so far superior that there is no argument whatsoever," says C. H. Makins, manager of the company. "We have kept an active track of the cost of operation. Figuring it out in detail for our deliveries here, we have reduced our cost, taking into consideration

10 years ago by Mr. Aurelius, who went to Oklahoma City with a capital of \$500. With that small beginning the company's business has grown rapidly, and this year Mr. Aurelius expects that the volume of business will be around half a million dollars.

"We have found that one of the chief assets of the company is the excellence of its delivery service," asserts Mr. Aurelius.

While this is only one instance of the value of motor truck delivery to the operators of lumber yards, many others might be cited in support of the contention that modern delivery methods are required to do business in an efficient and economical way. Thousands of lumber dealers have found that motor trucks not only cut the cost of deliveries, but give a great deal better service. ✚

MOTOR TRUCKS have proven their value to members of the building industry in so many ways that they are rapidly being added to the hauling equipment.

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Trailmobile

Trade-Mark Reg. U. S. Patent Office

For Light and Heavy Work

The Motorless
Motor Truck

Thousands
in Use

DIVISION No. 1
Light Four-wheeled
Trailmobiles for use
with passenger cars
or light trucks,
1,250 lbs., $\frac{3}{4}$ ton
and 1 ton.

DIVISION No. 2
Heavy-duty Four
wheeled Trailmo-
biles for use with
trucks; $1\frac{1}{2}$ tons,
non-reversible; 2
tons; $3\frac{1}{2}$ tons; and
5 tons, Reversible
and Non-reversible.

DIVISION No. 3
Semi-Trailmobiles:
2 tons; 3 tons; 5
tons; and 7 tons.

WHETHER the building operation is light or heavy there is profitable work for the Trailmobile to do. Heavy four-wheeled reversible Trailmobiles and the larger Semi-Trailmobiles cut time, labor and hauling cost almost in half in hauling heavy building materials.

To the light builder light Trailmobiles are equally an advantage. A ton can be hauled behind a passenger car when hauling is necessary—and the car can be used for business or pleasure at other times.

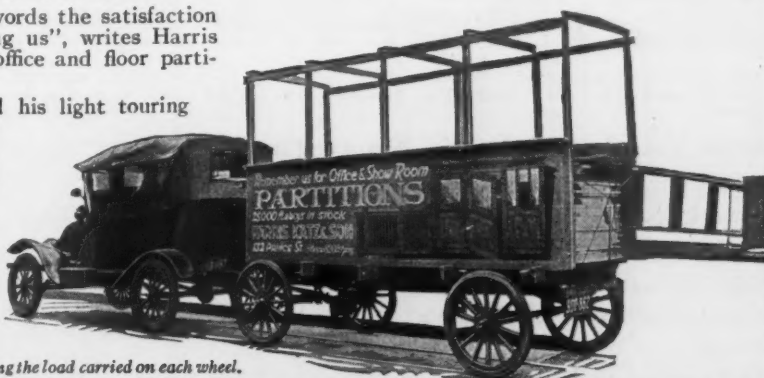
"We cannot put into words the satisfaction your Trailmobile is giving us", writes Harris Katz who specializes in office and floor partitions in New York City.

He hauls a ton behind his light touring car without any difficulty or annoyance whatever. The hauling costs less than it would with any other equipment.

Write for booklet, "Economy in Hauling".

The Trailmobile Co.
583 E. Fifth Street
Cincinnati, O.

Good roads are preserved by reducing the load carried on each wheel.



This is a MODEL 12 Miami Trailer

There Are 19 Other
Models

Our catalog and pamphlets are fully illustrated and give you a clear idea of the trailer that is suited to your needs.

WRITE FOR IT TODAY

Capacity 3000 Pounds!

There is a Miami Model that will solve any hauling problem. Hook your Ford to a Model 12 and you've got a truck. Every part built right. Artillery wheels with solid rubber tires, timken roller bearings. Special shock reducing drawbar. Solid Oak and Poplar body. 24" wheelbase. Fully equipped with electric tail light. Submit your hauling problems to us. Write for prices and further details.

THE MIAMI TRAILER CO., Troy, Ohio



One of the Two 5-ton "Acme" Trucks Used on the Excavating Job by the S. J. Peterson Co., Minneapolis. The Camera Was Snapped Just as the Clam Shell Was Releasing Its Load.

Motor Trucks on Large Excavation Jobs

THE use of horses and teams on large excavation work is so infrequent nowadays as to cause comment. Practically every contractor who has extensive work of this kind depends on motor trucks to haul the dirt out of the excavation and to the place where it is to be dumped, usually many miles away.

Two exceptionally interesting pictures that show the part motor trucks play on large jobs of this kind are shown in the accompanying illustrations. They were taken in Minneapolis while the trucks were at work on an excavating job of 50,000 yards of dirt. The contractor is the S. J. Peterson Co., which has two 5-ton trucks at work.

One of the illustrations shows the truck receiving a load from the steam shovel. The photographer snapped his camera just as the jaws of the clam shell were opened, and half a load of dirt can be seen dropping into the truck. The other view shows a

cutting costs for contractors.



The Advantages of Fall Painting

Paint dealers often complain that property owners do not buy paints in the quantity they should for fall use. Master painters also find it more difficult, as a rule, to secure painting jobs in the fall than earlier in the year.

This may be due to accepting conditions as per old traditions in the trade; failure to more strongly present the advantages of fall painting to the property owners. There are many talking points in favor of fall as the ideal time to paint, but if the property owner is accustomed to considering the spring or summer as the traditional right time, those advantages may not occur to him unless the dealer or the master painter points them out.

It is a well-known fact that building materials deteriorate more rapidly in winter than in summer. Paint to waterproof surfaces is the best preventive. If moisture enters the pores of wood it swells and if the weather is cold, freezes. This causes cracking and starts decay.

Another advantage of fall painting is the absence of intense heat, hence no blistering and not too rapid drying.

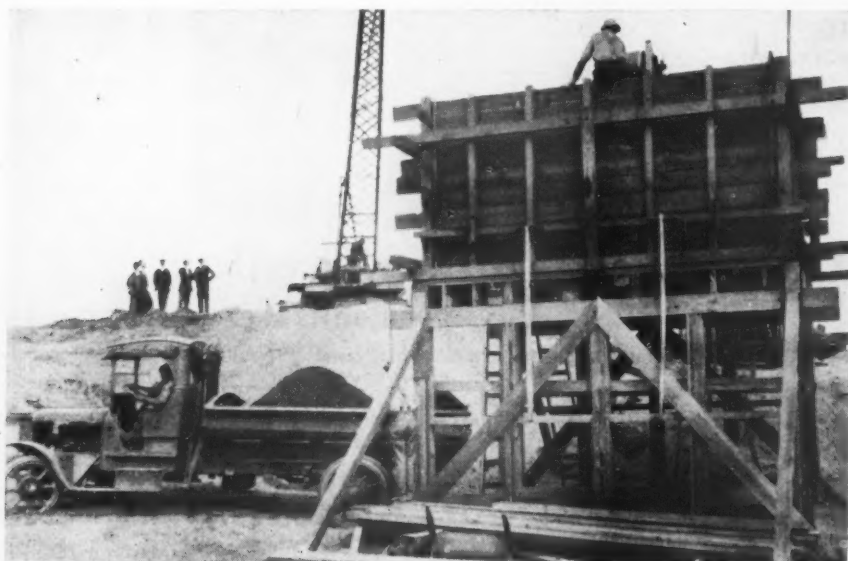
Neither is there much danger of thunder storms in the fall, whereas in summer many a painting job has to be done over because of the damage done by a sudden storm.

Flies and other insects frequently disfigure newly painted jobs during the summer. They are not troublesome in the late fall.

From the property owner's standpoint, he is likely to get a better job if his painting is done in the fall because he catches the master painter at a time when he is usually not rushed with work, therefore, has more time to spend on the work.



THE AMERICAN BUILDER Family in October numbered more than 42,500 members of the building industry. And when you ask a question thru the Correspondence Department, it comes to that number of practical men engaged in the same profession as yourself.



A 5-Ton "Acme" Truck of the S. J. Peterson Co., Minneapolis, Leaving the Loading Place. An Interesting Part of This Picture Is the Bin, Into Which the Dirt Is Dropped and Then Conveyed Thru Chutes to the Trucks That Are Driven Underneath. This Is Also a Good Design for a Material Storage Bin.



Insure Uninterrupted Transportation This Winter—

NEVER within the history of the building business have the dependability, adaptability and economy of motor truck transportation become such a vital business necessity as today. The winter days ahead make it imperative for you to realize the importance of choosing the make of trucks that will haul and deliver your products, goods, materials and supplies every day this winter without interruption or delays.

To insure Uninterrupted Transportation 365 days in the year, the ALL-YEAR Cab for Kissel Trucks was originated, perfected and patented. By adding the winter attachments—side, door and window attachments—the open cab, standard equipment on the four largest Kissel models, is quickly changed to an enclosed cab, warm, dry and comfortable—giving complete protection to drivers in the most severe winter weather—removing the necessity of layups on account of storms—increasing the efficiency of drivers and results for owners.

Kissel Trucks, equipped with the powerful Kissel-built engine, maintain schedules because they are built to overcome obstacles unsurmountable with trucks of less development. The nearest Kissel dealer will study your transportation requirements to insure your getting the right sized Kissel truck, thereby reducing your transportation expenses to the proper ratio of goods hauled and miles covered. Specifications, prices, etc., on request.

Kissel Motor Car Company
Hartford, Wisconsin, U. S. A.



Let us send you portfolio of wood panels free. With it you can show your clients just how their woodwork and floors will look when finished with Johnson's Wood Dye, Prepared Wax, Under-Lac, Flat Wood Finish, etc.

In this portfolio the Johnson finishes are shown on all popular woods—panels of other woods sent on request. The portfolio also gives full specifications and instructions, as well as covering capacities. Any good painter can successfully use Johnson's Artistic Wood finish.

JOHNSON'S WOOD DYE

is a dye in every sense of the word—it is made in twelve different shades—it goes on easily and quickly without a lap or streak—and it is put up in glass jars so there is no possibility of color changing.

We will also be glad to send you free a copy of our booklet, "The Proper Treatment for Floors, Woodwork and Furniture." It is full of valuable ideas and information for any one interested in the proper finishing of wood. Its practical suggestions may mean money to you.

Use attached coupon

S. C. JOHNSON & SON
"The Wood Finishing Authorities"
RACINE, WISCONSIN

-----Coupon-----

S. C. JOHNSON & SON
"The Wood Finishing Authorities"
Racine, Wis.

Please send me free and postpaid your portfolio of wood panels and booklet, "The Proper Treatment for Floors, Woodwork and Furniture."

Name.....

Address.....

I buy from

S. C. JOHNSON & SON, Dept. AB11, Racine, Wis.

Finds Paving Mixer Saves Time and Labor on Sidewalk Construction

W. A. LEYRER, LANSING, MICH., LAYS 50,000 SQUARE FEET OF WALK IN A DAY.

CONTRACTORS, being practical men on building jobs, oftentimes discover uses for equipment that, perhaps, did not occur to the designers and manufacturers of that equipment. Thru his experience it frequently occurs that the contractor, knowing the simpler methods of doing a certain job, gets the idea that he can use his machine efficiently on a piece of work and tries it out successfully.

That is exactly what W. A. Leyrer, a Lansing, Mich., contractor has done. Besides his contracts for concrete building foundations and paving work, Mr. Leyrer has laid many miles of sidewalk. And the thought occurred to him that there was a great waste of time and energy in wheeling the concrete from the mixer into the sidewalk forms. So he ran his paver, with its long spout, up to the sidewalk forms, turned the spout at an angle and delivered the mixture into place. The trial was so successful in the saving of time and labor, thereby cutting the cost of construction, that Mr. Leyrer now does all of his sidewalk laying with a paving mixer.

The accompanying illustration shows Mr. Leyrer and the paver he uses at work on the job. It will be

noted that the walk being laid is in a new portion of Lansing and that there are under construction some very excellent homes in that locality. By the use of the paver as shown, Mr. Leyrer has been able to lay as much as 40,000 and 50,000 square feet of walk in a single day. With the machine, since he discovered what is believed to be this new use for it, Mr. Leyrer has laid about five miles of sidewalk.

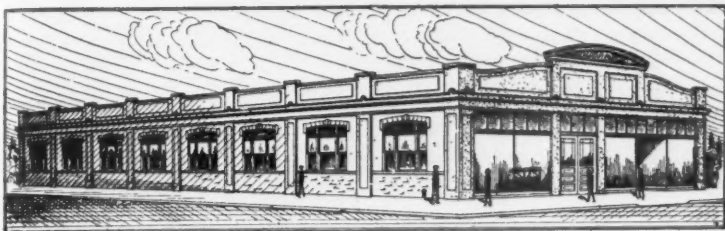
The advantages of using a paver on sidewalk construction are that it delivers the concrete right where it is to stay and where the men can grade and tamp it without rehandling it. As the forms are filled the paver is moved along under its own power, and by a proper distribution of materials along the way, it is possible to lay the walks very cheaply.

There is and has been a big building boom on in Lansing since building operations opened up last spring. And it is to be seen that the houses being built there are above the average. This fact has given Mr. Leyrer a great amount of foundation work, on which the paver is also used. By doing a variety of concrete work Mr. Leyrer has had a busy and successful season.

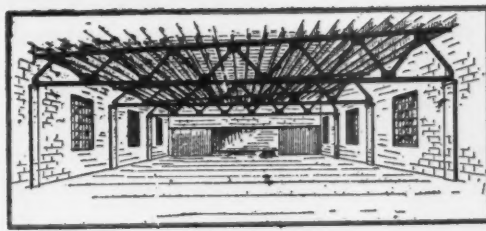


W. A. Leyrer, of Lansing, Mich., and the Paving Mixer Which He Has Adapted to the Work of Laying Concrete Sidewalks. Mr. Leyrer Finds the Mixer Saves Time and Labor, Adding to His Profits. He Has Laid as Much as 40,000 and 50,000 Square Feet of Walk in a Day, and Had About Five Miles to His Credit When the Summer Ended. Besides, Mr. Leyrer Uses the Paver to Pour House and Other Building Foundations.

MODERN GARAGES



GARAGE—ROUND LAKE, ILL.



GARAGE—ST. JOHNS, MICH.

Write for One of Our "Garage Illustrations," Showing at Least 50 Modern Buildings Designed By Us

STRUCTURAL STEEL—MODERN STORE FRONTS—FIREPROOF BUILDINGS

STEEL WINDOWS—FIRE ESCAPES—WIRE PRODUCTS—STEEL BRIDGES—ELEVATORS—STEEL CEILINGS—SKYLIGHTS AND CORNICES—MILLWORK AND GLASS—ROOFING

"INTERNATIONAL SERVICE"

Means immediate shipment of your orders from one of the largest stocks of steel in the world
Plants operate 24 hrs. per day



INTERIOR VIEW OF STRUCTURAL STEEL PLANT
EVANSVILLE, INDIANA

INTERNATIONAL STEEL & IRON CO., Inc.

Address Dept. 18

EVANSVILLE, IND.

OPERATING

INTERNATIONAL STORE FRONT CO.—INTERNATIONAL WOODWORKING CO.
INTERNATIONAL BRIDGE CO.

WE OPERATE

STEEL PLANTS—SHEET METAL PLANTS—WOODWORKING PLANTS



—THE BRICK FOR EVERY NEED

WESTERN-FACE BRICK

FOR THE HOME

A PERMANENT, economical, and artistic building material. The residence pictured here is built of Cloister Face Brick in reds and browns—only one of the many beautiful textures and tones we offer you to select from according to your patron's individual taste. A home of Western brick is an achievement you will always point to with pride; age but mellows and deepens its charm.

WESTERN HOLLOW TILE

For Farm Buildings

Is rapidly taking the place of wood, because of economy of upkeep. Fireproof and vermin-proof. It gives absolute permanence in buildings. If your dealer does not carry the "Western Line," suggest to him that he write for samples and prices.

WESTERN BRICK COMPANY
DANVILLE, ILLINOIS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

New Fronts Greatly Increase Value of Business Buildings

OWNERS NOW ARE INTERESTED IN STANDARD STORE FRONTS, AND CONTRACTORS ARE SECURING MANY REMODELING JOBS

OWNERS of business buildings have had the unusual experience of finding their properties suddenly increased in value 50 per cent or more. Not that the buildings have improved at all, but it will cost that much more to replace them. Their earning capacity also has increased in the same proportion. But how much more valuable many of them would be if they were brought up-to-date. While an old building remodeled would not bring as much in rent as a new one, its earning capacity would be greatly increased if it filled the demands that modern business makes of the buildings in which it is transacted.

Any sort of a building nowadays is too valuable to not be utilized to its fullest extent. And when old buildings can be transformed in appearance and efficiency by the expenditure of relatively small amounts of money, it is economy to improve them.

One of the most important, if not the most important, part of a retail establishment is the front. For it is the front of the store that attracts or repels customers, and it is in the windows at the front of the store that the merchant displays the merchandise that he has for sale inside. It is with remodeling the front of old store that the members of the building industry are interested, for remodeling means profitable contracts.

Remodeling Important Work of Contractors

During the last few years this work of remodeling old store fronts has become an important part of the contractor's activities. Perhaps it was the idea of conservation that first caused so many building owners to install modern fronts, rather than tear down the old buildings and erect new ones. At any rate, thousands of owners of business buildings have been doing this each year, and the contractors are getting the business.

It now is a simple matter to give the owner of a building the sort of a store front that his tenants want, and which is suitable for the building that is to be remodeled. Store fronts have been standardized, just as doors, sashes, and other millwork have been. Store fronts come to the contractor all ready to install the sash and sills dimensioned to fit the building that is being remodeled. The contractor, after securing a remodeling job, simply furnishes the store front designers with the dimensions, and plans are drawn and the materials made accordingly.



A Frame Business Building That Has Been Modernized by the Installation of a Standard Store Front. The Front Has Greatly Increased the Value of This Building for Business Purposes.

These modern standardized store fronts are made to conform to the present-day requirements of businessmen and firms. They provide for proper ventilation importance the plate glass is held in place in such a way as to give the least possible obstruction of the view of the window to the passerby; and what is of real importance the plate glass is held in place in such a way that expansion and contraction from heat and cold are allowed for. These features are taken care of by experts in store front designing and store front construction.

Some Examples of Modern Store Fronts

Some examples of the attractive and modern store fronts that

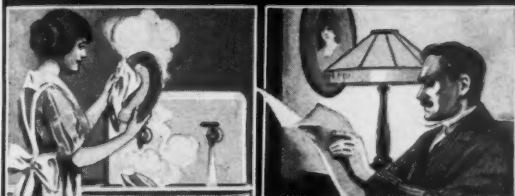


An Elaborate Standard Store Front, Such as Modern Mercantile Concerns Are Installing.

The Comforts of Home



**Electric Light
and Running
Water From
One Plant**



BUILD A HOME, not a house. Electric Light and running water—continuously and without interruption—are just as sure and dependable in the country as in the city—when you install a complete compact Kewanee plant.

KEWANEE

**Electric Light Plants Water Supply Systems
Sewage Disposal System**

can be had for every size and type of building—and they are built to last! They are inexpensive in first cost, economical to maintain.

Kewanee Systems are the result of years of engineering experience. Their successful operation is constantly assured by a highly skilled technical department, whose drafting and engineering staff is always ready to co-operate with you.

Clients recommend builders who have installed Kewanee Systems.

Write for free bulletins on Electric Light,
Running Water and Sewage Disposal System.

KEWANEE PRIVATE UTILITIES COMPANY

Formerly Kewanee Water Supply Co.

424 South Franklin Street

KEWANEE, ILL.

In Every Country Home

A Pipeless Furnace with Real Talking Points

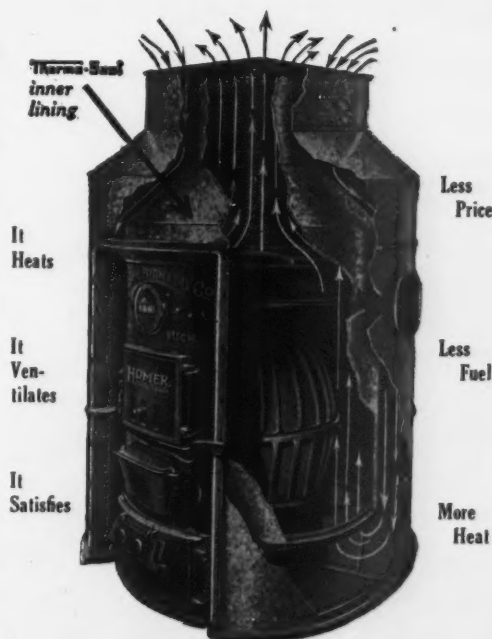
There's only one genuine Homer, original patented pipeless furnace. It's the only pipeless furnace with the Thermo-Seal feature. This one big idea makes it easy for you to sell the Homer in competition with the hundred and one other makes. We are not making the cheapest furnace on the market, but we can show you where you will make more real net profit on every sale you make on the Homer than you can possibly realize on any other one thing in your line. The Homer original patented pipeless furnace

with Thermo-Seal inner lining

will make satisfied customers and real friends for you. You need not be ashamed to boost for the Homer. It was the best pipeless furnace made ten years ago and it's the best pipeless furnace made today.

We want Contractors and Building material dealers to work for us—take on our agency and clean up this fall and winter.

A letter will bring our special representative, and you need not feel obligated if you do not sign up for our agency.



Homer Furnace Co.
Homer, Michigan
U. S. A.

HOMER
ORIGINAL PATENTED
PIPELESS FURNACE

contractors have installed in old and new buildings are shown by the accompanying illustrations. They also give excellent ideas of the different store front designs. In one, an old frame building has been made attractive by the contractor by simply tearing out the front and putting in large show windows on either side of the entrance. The other illustrations show how much space for the display of merchandise has been given the merchants who occupy these stores.

As the AMERICAN BUILDER has said many times, remodeling store fronts is profitable work for contractors. These remodeling jobs can be accomplished without interference with the business of the occupants of the store. This is equally true in winter and in summer.

In these days of high costs of building, owners of business buildings will be particularly interested in a proposal to remodel their structures. If it is pointed out to them that a new front in the building will increase its value a great deal more than the improvement costs, and that the building will bring much higher rents, contractors will secure a great amount of this sort of work. After the contract is secured,

as has been suggested, the help of expert store front architects can be secured for the asking.



BUILDING in the larger cities so far has been principally good-sized buildings containing small apartments that rent for high prices. But in the rural sections it is different. There every sort of building is going forward in good shape.



Another Style of Modern Standard Front for a Small Store. This Design Gives the Owner an Exceptionally Large Amount of Space to Display His Merchandise.



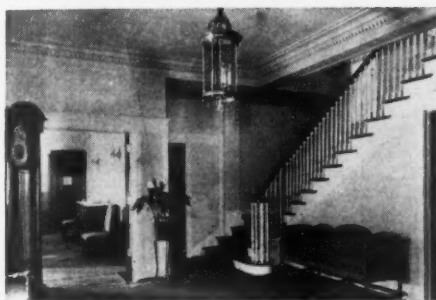
The Type of Canopied Store Front That Is Installed in Many Modern Retail Establishments. The Broad Entrance Narrows to the Door, Giving a Large Amount of Window Display Space.

SAVES 40%

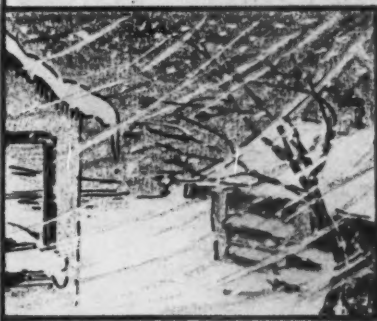
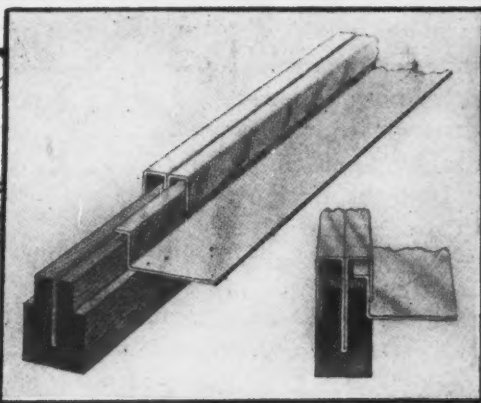
E-COD FABRIC saves 40% of the entire scratch coat usually required to form the key on an open mesh lath. Applied directly to the studs, it saves sheathing, as the felt backing makes the walls weather-proof, and water-proof. Plaster applied to E-COD FABRIC becomes a reinforced slab of great strength and durability.

E-COD FABRIC is water-proof, weather-proof, rust-proof, fire-retardant and sound-deadening. It is used on both exteriors and interiors. Contractors and builders are invited to write for full particulars as to its economy, strength and durability. With the present and future demand for economy in building, *E-Cod Fabric* cannot be overlooked.

Mac ADAMS and CALL



111 West Washington Street
CHICAGO - ILLINOIS



Between Home & Winter Winds SAGER INTERLOCKING PARTING BEAD

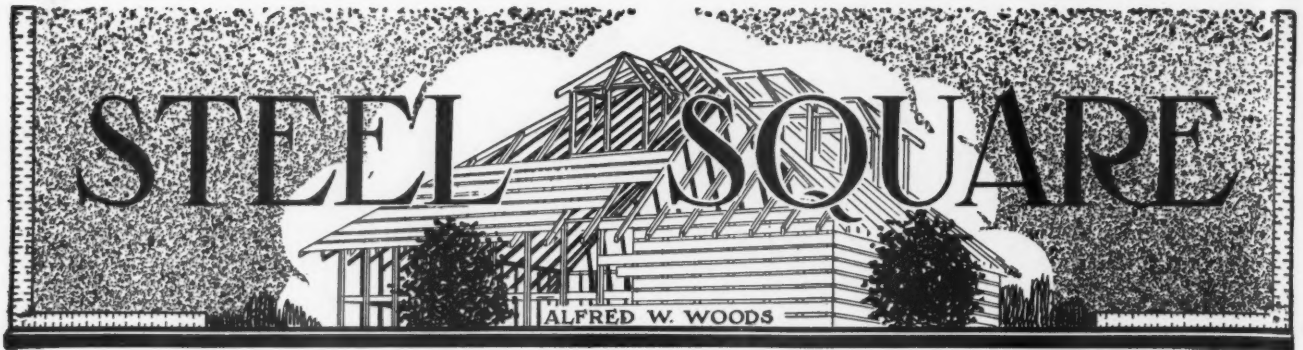
EVERY home owner in your community who wants to save on coal bills or keep his family comfortable through the winter is a prospect for the sale of Sager Metal Weather Strips.

Here is an opportunity for every carpenter or contractor to make the slack winter season a season of profit for himself. We will gladly tell you all about installing these weather strips. They are so simple and practical that they sell themselves on sight. Self-adjusting, dustproof, draft-proof, invisible after installed, with no rattling, warping, or wear, they defy competition. **Sager Weather Strips cut coal bills 20%.**

Get in on this proposition—
It means money to you

Sager Lock Co.
North Chicago Ill.

Write for complete data on
Sager Metal Weather Strips



Possibilities of the Steel Square

A SIMPLE METHOD FOR DEVELOPING THE RAFTERS FOR A VAULTED CEILING, ALSO SHOWING HOW TO APPLY THE STEEL SQUARE TO OBTAIN THE CUTS

By A. W. WOODS

WE have before us a letter from a subscriber asking how the cuts may be obtained, with the aid of the steel square, for the rafters for a vaulted ceiling, for a room 10 by 20 feet in the clear, and of which the party submits a plan and elevation, which we have redrawn for illustration purposes, and from it will be seen that the curve for the sides and ends must be irregular or, in other words, of different pitch.

This requires the development of the curve for three sets of rafters, that is, for the hip, for the side and end common rafters. This alone furnishes a problem for the proper laying out of same so that they will coincide when set up in place, but as we were not asked to illustrate the development of the rafters we will not enter on that phase of the question further than to show by a simple illustration how this may be developed from a right-angle triangle with sides equal to the respective runs of the rafters as shown in Fig. 1. The lines at right angles from the sides of the triangle are of the same length for the respective sides and we trust this is made clear without further explanation.

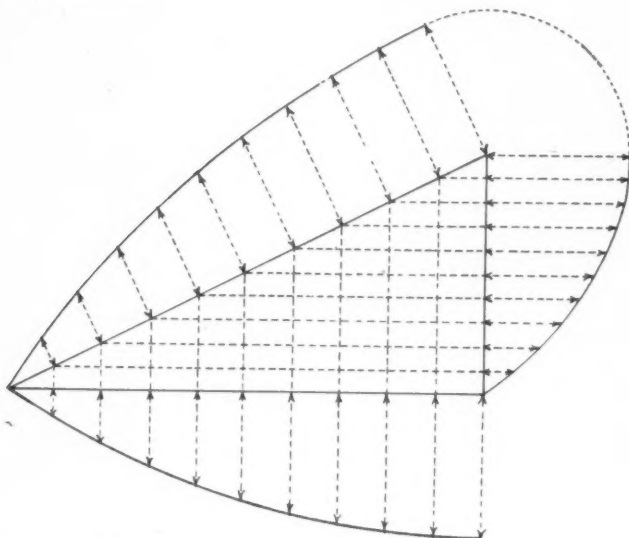


FIG. 1.

How to Get Contour of Hip Rafters for Vaulted Ceiling.

We will now confine our remarks to the question asked—how to obtain the cuts with the aid of the steel square for curved rafters. Fig. 2 shows the length of the common and jack rafters for the respective sides of the room; this, too, we trust is clear enough without further illustrations.

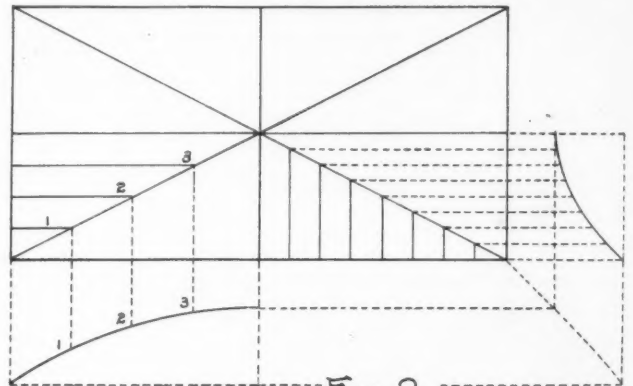


FIG. 2.

Common and Jack Rafters for Vaulted Ceiling.

We come now to the real question, how to apply the square to obtain the cuts, and since the square must be applied to a straight line as in the case of the straight rafter, its back is made to represent this line. So in the absence of straight line in the case of the curved rafter one must be produced as shown in Fig. 3, which, will be seen, is the same as the pitch for the common straight rafter, and to this line apply the square for the seat and plumb cuts, as in the case of the straight rafter, but there is no way of directly

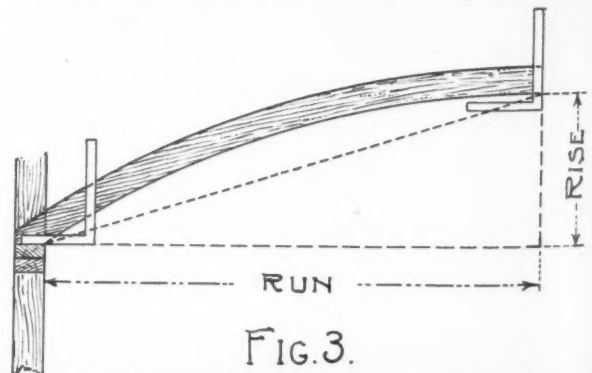


FIG. 3.

Applying Square to Curved Rafter for Vaulted Ceiling.

How Much are Two Hands Worth?

IN these days of high wages and labor scarcity, does it seem logical to set an expert mechanic to work tediously scraping floors by hand? It would be necessary, to be sure, if we were living twenty years ago, and no other methods were available. But in these modern days, such procedure doesn't pay when quicker and better results can be obtained through the

"American Universal" FLOOR SURFACER

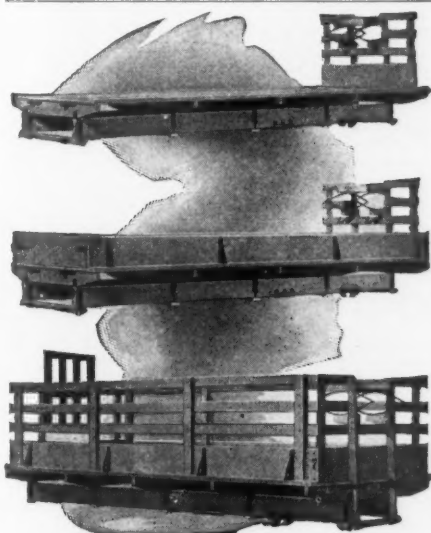
This efficient little machine will allow at least *twelve* very valuable hands to be released for other and more important work.

Our standing offer of a Five-Day Free Trial will allow you to thoroughly test the machine, and determine for yourself just how much time and labor it will save.

Write for our proposition today.

American Floor Surfacing Machine Co.

515 S. St. Clair Street
Toledo, Ohio



Every Farmer Needs

This Easily Constructed

Convertible Wagon Bed

Here is a combination type of wagon bed that is needed on every farm for use in all seasons. It provides a wagon box that is weather tight—a stock rack that slips on snug and solid—**three bodies in one**. Hay can be loaded and unloaded faster and easier—grain loaded with less lifting—stock handled with greater ease and security.

Any Carpenter or Farmer Can Make This Convertible Wagon Bed

at an exceptionally low cost by using the necessary **ALLITH-PROUTY** Hardware. We supply you with a complete hardware

set and the necessary drawings which make it easy for you to do the work. This hardware fits any size lumber, which need not be planed. This convertible wagon body is not only adapted to wagon bodies, but the construction principles are adapted for truck use also.

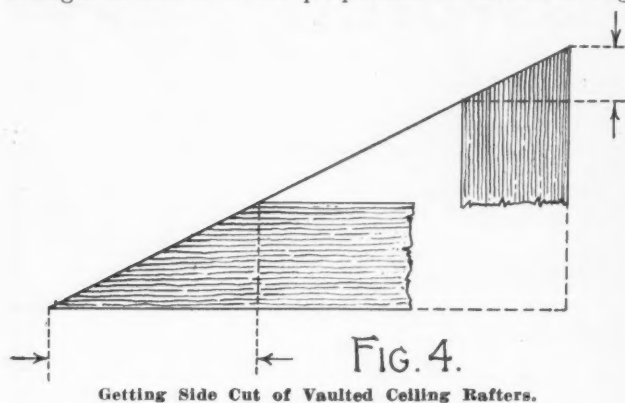
Send for the well illustrated literature that shows and describes this Hardware and illustrates how easy you can make this convertible wagon bed.

DEALERS Everywhere find farmers keenly interested in this money and labor saving Hardware, for the convertible body type is needed on every farm. Get in touch with us for our proposition.

Write for general catalogue number 90, which beautifully illustrates and describes our complete line of Fire Door Hardware, Door Hangers and Tracks, Overhead Carriers, Garage Door Hardware, Light Hardware, Spring Hinges, Hardware Specialties, Rolling Ladders, Etc.

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Hardware Manufacturers

applying the square for obtaining the side cut of the rafters, but the same may be obtained by first laying off two sets of plumb lines the horizontal distance apart, as shown by the arrowheads in Fig 4. The triangle in this is to the proportion as shown in Fig.



1, and in the angles lay off the full thickness of the jack rafter and by squaring out as shown by the dotted lines will represent how far apart the plumb lines should be for each set of rafters. After laying off the plumb lines, which, by the way, for accuracy, should be on both sides of the rafter, and by cutting diagonally across from one side to the other will give the proper cut to fit against the hip. This also applies to the side cuts for the hip, and that, too, regardless the rise given the ceiling.



Fooled Her

Hub—"This dollar I hold in my hand reminds me of a scandalous secret."

Wife (eagerly)—"Oh, John, do tell me about it."

Hub—"It reminds me of a scandalous secret because it is so hard to keep."—Boston Evening Transcript.



A Giveaway

Bobby, aged six, answered the door when his big sister's new beau called.

"Where's your sister?" he was asked.

"Upstairs, putting herself on," was Bobby's rather startling answer.—Boston Evening Transcript.



At the Turn

"I don't see how I could possibly be any worse off than I am, sir."

"Then cheer up. You've got nothing further to worry about."—Boston Evening Transcript.



Continuity

"Things repeat themselves, don't they?"

"Certainly. You used to hear a great deal of the mobile countenance. Now we have the auto face."—Baltimore American.



One Better

"Bragg won't let any one get the better of him. The other day when a man boasted of the fine ruby he had on his finger, what do you think Bragg said?"

"What did he say?"

"It was nothing to the carbuncle on his neck."—Baltimore American.

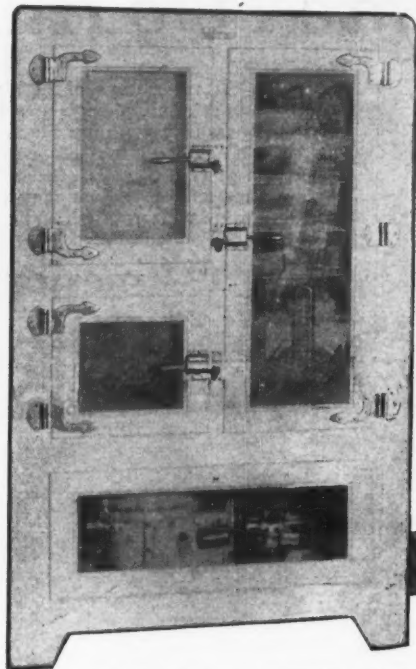
"This is the Home I am Going to Build"

(Continued from page 86.)

available as a sitting room in the daytime and a sleeping room at night. Likewise the shallow closets permit

the rooms to be a foot larger, without sacrifice of the space for clothes and other wearing apparel.

Sheet 3 of the blueprint supplement shows the floor plan of the basement. At the front is the heater room and fuel room. At the rear the laundry, a workroom and the fruit room, or cold storage room. A room in which to store trunks, and the many other things that can



In the Kitchen Is an Electric Refrigerator, That Automatically Provides the Ice Supply and Maintains an Even Temperature Twenty-four Hours a Day.

be "put away" is at the foot of the stairs.

Walls of Veneered Common Brick

Both the house and the garage have 8-inch walls of common brick, with a 4-inch veneer of face brick. The garage and house use a party wall, cutting the cost considerably. The inside dimensions of the garage are the same as the playroom, 11 feet 9 inches by 19 feet 6 inches. It is equipped with doors hung on a trolley and that slide around the corner, parallel to the side walls. At the rear is a workbench.

Mr. X. believes that this is the sort of a house that will give him and his family the maximum in comfort and convenience. It will be seen that there is nothing "freakish" about the house. Wherever it is out of the ordinary, the aim has been to lessen the work in the house and to save costly space. Other members of the AMERICAN BUILDER staff have been working out plans of their own, which will be shown from month to month. In the meantime we would like to have the members of the AMERICAN BUILDER Family comment on this design.




A Frank Discussion

"Mr. Grabcoin, would you consider me an eligible son-in-law?"

"Mr. Dubson, have you ever done anything that would justify me in considering you an eligible son-in-law?"

"Well, if you eliminate the time I've put in playing pinochle with you, I can't truthfully say I have."—Birmingham Age-Herald.



Make Your Town Draft-Proof

ALLMETAL

With

Allmetal Weatherstrip

Hundreds of buildings in your town will be equipped with Allmetal weatherstrip this winter. Will the profit be yours? It's the double profit that makes this proposition a winner. A profit on the material—another on the installation. There is only one part of the deal easier than installing them—that is selling them. The 25% saving in coal, the added comfort in the home, the simplicity and economy of Allmetal installation makes Allmetal strip interesting to every owner of residence or business property.

Write today for our plan to make this a profitable winter for you.

Allmetal Weatherstrip Co., 124 W. Kinzie St. Chicago, Ill.

-making New Houses from Old

The picture at the right shows what a handsome house was made from the old one, shown at the left—by means of the

Hodges Electric Stucco Machine

It not only projects stucco in this artistic effect, but also plaster, concrete aggregate and waterproofing on concrete, hollow tile, brick, block, stone, metal or wood lath.

With this machine, contractors cannot only do artistic work, but can also save 50% on the cost of a job. In this way, they can do more jobs with a wider margin of profit, and can underbid all competitors.



We have figures to prove our claims.
Gladly sent with our catalog
on request.

Hodges Stucco Machine Works

Dept. A. B. Union Central Tower
Cincinnati, U. S. A.



NEWS OF THE FIELD

Capt. P. H. Brigham Joins Lakewood Engineering Co. Force

Capt. P. H. Brigham, 130th Engineers, U. S. A., recently returned from France, after nineteen months' foreign service, has received his discharge from the army and has entered the service of the paving department of the Lakewood Engineering Co., Cleveland, as field engineer for New York, New Jersey and New England.

Before Captain Brigham entered the army in May, 1917, he was employed as assistant engineer with the New York State Highway Department, with headquarters at Binghamton, N. Y.



Four Wheel Drive Auto Co. Enlarges Plant

The Four Wheel Drive Auto Co., of Clintonville, Wis., manufacturers of the F. W. D. truck, in order to handle increased business, had made an addition to its plant of two buildings, comprising 35,196 square feet of floor space.

A large quantity of new machinery has been ordered and is rapidly being installed.

Work on the new Canadian plant is progressing rapidly and soon the Clintonville plant will be relieved of all Canadian business.

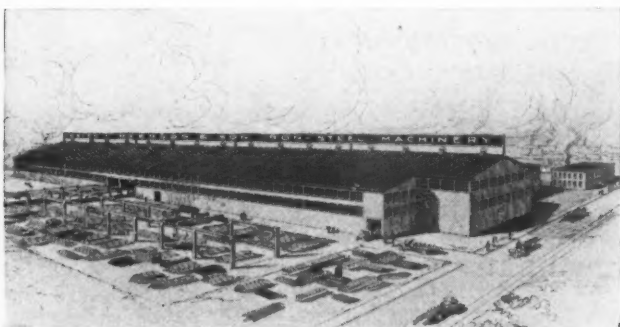
The Four Wheel Drive Co. reports domestic business strong with export demand unusually heavy.



Joseph T. Ryerson & Son Enter Buffalo Market

An interesting result of the recently announced re-incorporation of the Ferguson Steel & Iron Co., of Buffalo, is the sale by them of their warehouse plant, stock and good will to Joseph T. Ryerson & Son of Chicago. The new owners will make this the fifth unit in their chain of warehouse plants, which already includes plants of the most modern type for warehouse service at Chicago, New York, Detroit and St. Louis.

The Buffalo property covered by the purchase at present includes a main building of about 100,000 square feet, divided into three spans, served by several bridge cranes, together



Buffalo Plant of Joseph T. Ryerson & Son, Chicago.

with a large crane-served yard, office building, garage and store house.

The Ryerson plant is on the New York Central Railroad and joins the main Buffalo yards. This exceptional location provides excellent rail transportation facilities. The plant is also well situated for rapid city delivery by motor trucks. While the plans are not yet fully determined, a very considerable improvement and enlargement of the property will be undertaken this winter.

A. C. Allshut, formerly in charge of the Ryerson district office in Milwaukee, has moved to Buffalo and will take charge as branch manager in Buffalo for Joseph T. Ryerson & Son.



Devoe & Raynolds Co. Unveil Tablet in Memory of Lieut. Benjamin Taylor Hammond

A beautiful bronze memorial tablet bearing the Latin inscription "Dulce Et Decorum Est Propatria Mori" (It is sweet and glorious to die for one's country) has been placed by the employees and the Devoe & Raynolds Co. on the wall of their office building, 101 Fulton street, New York, in memory of Benjamin Taylor Hammond, first lieutenant, Company E, 107th Infantry, who met his death on the battlefield of St. Quentin, France, Sept. 29, 1918.

In this engagement fully 80 per cent of the members of Company E were killed or wounded. The captain of the company was one of the first killed, and Lieutenant Hammond, taking command, called "Follow On" and immediately received his death wound.

Of all the employees of the Devoe & Raynolds Co. who offered their services to their country, Lieutenant Hammond was the only one called upon for the supreme sacrifice.

On Monday afternoon, Sept. 29, the first anniversary of this battle, all business in the Devoe & Raynolds Co.'s office was suspended for one hour, and relatives and friends of Lieutenant Hammond attended a memorial service during which the tablet was unveiled.

W. H. Phillips, president of the company, in reviewing the business and military career of Lieutenant Hammond stated he came with the company in January, 1898, as a boy and progressed through the different departments until he became a stockholder in the company.



Plan Vigorous Campaign for Concrete Building Block

Comprehensive plans for a vigorous campaign to promote the use of concrete building block were discussed at the meeting of the Concrete Block Machinery Association, held at the Hotel Sherman, Chicago, Oct. 13. Nineteen manufacturers of concrete block machinery are members of the association and a majority of them were represented at the meeting. Speakers who told of the exceptional merits they have discovered in building with concrete blocks were H. H. Richards, architect, of Chicago, who was one of the first architects to use blocks; R. F. Havlik, engineer in charge of construction at Mooseheart, Ill., where the Loyal Order of Moose have expended more than a million dollars in buildings, all of which are block; A. J. R. Curtis, manager of the Farm and Cement Products Bureau, of the Portland Cement Association, and H. C. Campbell, advertising director of the Portland Cement Association. Mr. Campbell advocated a vigorous advertising campaign in the interests of block. Reports of committees and the adoption of a constitution and by-laws were other business transacted at the meeting. The following day, Oct. 14, the members of the

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Now you have the opportunity to own a strictly high-grade, accurate Convertible Level on Aloe's Easy Rental Purchase Plan—and without previous experience, or technical knowledge, you can put it to work so that it will make big money for you. Only \$5.00 brings it to you—then put it to every possible test. If you are pleased with it, pay the small monthly installments and the level is yours.

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It is a combination transit and level, quickly converted to the use of either. It is absolutely accurate—satisfies the requirements of the most exacting contractors—yet is so simple that anyone, without technical education can use it. Sights above and below the horizontal can be taken. You can use it for leveling up foundations, walls, piers, running boundary lines, fences—in fact, a thousand and one jobs you meet every day that require an accurate level.

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Catalog No. 103

—makes the Most of the Minutes

In these days, minutes are twice as valuable as they used to be. More work must be crowded into them, and better results obtained.

For securing the utmost efficiency in mixing concrete, there is no other mixer like the

Jaeger Junior

It is big enough to be employed on any kind of building construction, and yet is small enough for such little jobs as sidewalks, floors, foundations, etc.

It costs but two cents an hour to run the Junior—for which it turns out sixty thorough mixes. Every mix is revolved from fifteen to twenty times per minute, and the material is turned two and one-half times.

If you want to make the most of **your** minutes, try the Jaeger out on a couple of jobs. If it doesn't make good, we'll take it back.

Jaeger Machine Co.

521 Dublin Ave., Columbus, Ohio

association saw an absorption and compression test in the Structural Materials Research Laboratory of Lewis Institute and a demonstration of the Hodges Electric Stucco Machine. In the afternoon the party paid a visit to Mooseheart and inspected the buildings and the concrete block plant, which makes the blocks used in the building projects there. Those at the meeting and the companies represented were:

F. J. Kinsinger, of the Cast Stone Block & Machine Co., Windsor, Ont.; Braute Concrete Machinery Co., Benton Harbor, Mich.; George M. Friel, of the Hobbs Concrete Machinery Co., Columbus, O.; Louis P. Watson, of the Century Cement Machine Co., Rochester, N. Y.; Warren R. Rogers, of the Hamilton Concrete Machinery Co., Cleveland, O.; A. Freilbach and Frank Muenzer, of the Multiplex Concrete Machinery Co., Elmore O.; E. F. Olson, of the Anchor Concrete Machinery Co., Rock Rapids, Ia.; N. Ranselhoff and J. W. Frieberg, of the Ideal Concrete Machinery Co., Cincinnati; J. Bellingham and B. M. Turner, of New Zealand; J. J. McHugh and F. B. Zieg, of the J. B. Foote Foundry Co., Fredericktown, O.; M. Wetstein, of the Brandwell Co., Cincinnati; H. A. LaRoy, of the Pioneer Manufacturing Co., Waterloo, Ia., and W. A. Dunn and W. E. Dunn, of The W. E. Dunn Manufacturing Co., Holland, Mich.

The officers of the association are: President, M. Wetstein, Cincinnati; vice-president, F. W. Dunn, Holland, Mich.; secretary-treasurer, E. F. Olson, Rock Rapids, Ia.

The members of the association and the guests present at the meeting were entertained at luncheon and dinner by the Portland Cement Association.



Moisture Absorption Thru Varnish Same for Different Species of Wood

In experiments made by the Forest Products Laboratory, it was found that varnishes do not entirely prevent the transmission of moisture into wood but merely retard it, and that apparently there is no difference in moisture absorption thru the coating due to the species of wood used.

The panels used in the experiments were of yellow birch, basswood, red gum, African mahogany, white ash, white pine, Sitka spruce, southern yellow pine, bald cypress, incense cedar, white oak, western yellow pine, Port Orford cedar, and sugar pine.

Three coats of high-grade spar varnish were applied to four panels of each species. Two panels of each species were brush-coated and two were dipped by a special dipping machine designed to secure an even coating. The panels were allowed to dry 72 hours between coats and 10 days after the final coat before they were given the moisture-resistance test.

The moisture-resistance test consisted in exposing the panels for 17 days to a humidity of 95-100 per cent, or in an atmosphere practically saturated with moisture.

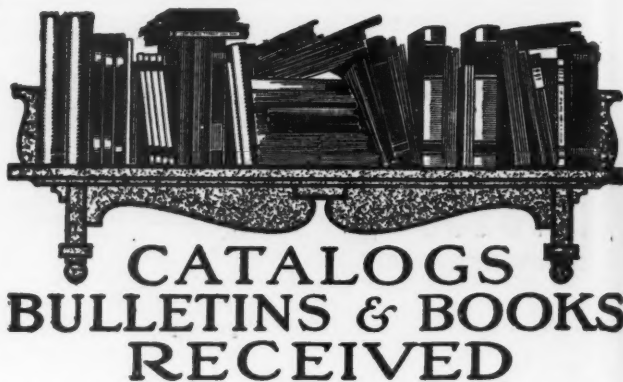
At the end of this test, it was found that all the brush-coated panels had absorbed between 5 and 6.5 grams of moisture per square foot of surface, and the dipped panels between 4 and 5 grams. Such variations in amount of absorption as appeared could easily have been due to inequalities in the application of the varnish. It was quite noticeable that the dipping process produced a more moisture-resistant coating than brushing.



ANY question about building that comes up is welcomed by the Correspondence Department.



DULL seasons in the building industry are a thing of the past, for the next few years at least. Working full speed ahead is necessary to provide the buildings that are needed.



The following literature, dealing with subjects of interest to builders is now being distributed:

"Modern Building Ideas and Plans," published by the Certain-teed Products Co., St. Louis, Mo., is out of print and the company announces it has no more for distribution. A description of the booklet was contained in this department of the July issue, and this notice is printed so that readers will not waste stamps inquiring for the booklet.

"Look Into This—" is the compelling title of a little 16-page booklet describing the woodworking machinery and power pump outfits made by the C. H. & E. Manufacturing Co., Milwaukee, Wis. Each machine is shown by illustration, with a brief description, and an invitation to ask for further information.

"The Answer," published by the National Lumber Manufacturers' Association, Chicago, is the title of a handbook of merchandizing ideas for lumber merchants. The handbook was prepared by H. R. Isherwood, retail service representative of the association, and contains information on building material costs, comparison of upkeep and the advantages of wood.

"Some Essentials of Design for Reinforced Concrete Apartment Buildings" is the title of an article in the November issue of "Concrete in Architecture and Engineering," published by the Portland Cement Association, Chicago. The article is by Henry J. Schlacks, a Chicago architect, and describes a building he has just erected. This is only one of many interesting and instructive subjects covered in this magazine.

Building with steel and lumber is described by text and illustration in the September issue of "General Fireproofing," issued by the General Fireproofing Co., Youngstown, Ohio. The use of the company's steel products in concrete construction also is described and illustrated in this issue.

Silica-graphite paint for durability and preservation of metal and wood surfaces is the subject covered in the leading article in the October issue of "Graphite," published by the Joseph Dixon Crucible Co., Jersey City, N. J. The article shows the economy and desirability of protecting metal and wood surfaces exposed to weather with paint.

"Checking Schedule for Projected School Buildings" is the title of a booklet by James O. Betelle, published by the Bruce Publishing Co., Milwaukee. The booklet is intended to be used as a guide in collecting information needed by architects and school boards before sketches and plans for school buildings are prepared.

"Old New England Doorways," by Albert G. Robinson, is a handsomely bound book, with 21 pages of introduction and the balance devoted to full page plates of doorways found in New England cities and villages. It is published by Charles Scribner's Sons, New York. Price \$3.



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The seepage of oil between imperfectly bonded top finish and the base of concrete floors in garages, round houses and machine shops, and in any building where oil is used, is one of the most serious and annoying problems that the present day architect and engineer has to contend with.

Avoid this come-back from the owner by specifying Living-Stone; it makes a positive impermeable bond between yesterday's work and today's. The use of acid on the concrete base produces a spongy surface into which oil easily percolates. Living-Stone insurance costs about one cent a square foot.

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Long years of hard usage only makes them more valuable to you. They are made of the finest steel carefully tempered—tough and flexible.

The mechanic of today wants the best. He isn't satisfied with the ordinary saw that continually needs attention.

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will find that BISHOP'S "HIGH SPEED" No. 250 meets his every demand and more than fulfills his expectations.

We have made the "High Speed" for Mechanics who appreciate REAL merit in their tools. Careful attention is given them through the entire process of manufacture, and we know that we are giving you the best saw you can buy at any price.

We have a leaflet describing the various kinds of Bishop saws.

"A Saw For Every Purpose"

Write for it today

GEO. H. BISHOP & CO.
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"Among Industrial Workers" is the title of a bound book of 154 pages, describing the work of the Y. M. C. A. in industrial centers. The book contains many illustrations. It is published by the Association Press, New York City. Price \$1.50.

A Time Record Book for Motor Trucks is a handy and accurate method of keeping motor truck records, published by the Service Recorder Co., Cleveland, Ohio. A copy will be furnished to owners of motor trucks on application to the company.

"Reasons for Hanging all Doors on Three Butts," by John Winter, contractor and builder, Davenport, Iowa, have been put into a six-page folder by the Stanley Works, New Britain, Conn. The Stanley Works offered a prize for the best article on this subject and it was awarded to Mr. Winter.

"Brick, How to Build and Estimate" is the title of a 48-page and cover handbook on brick construction, issued by the Common Brick Manufacturers' Association of America, of Chicago. This is the A. B. C. of brick construction and with architectural drawings, detailed information and photographs of actual construction shows the contractor how to estimate and execute brick work. Price \$1.00 per copy.

Concrete curbs, porch floors, etc., and how to build them are shown in Alpha Aid No. 18, issued by the Alpha Portland Cement Co., Easton, Pa. This issue also contains several instructive articles for dealers in cement.

Industrial Housing Designs which the government used in its housing project at Watertown, N. Y., are shown in a number of photographs, issued by the Creo-Dipt Company, North Tonawanda, N. Y. Twenty reproductions of photographs are contained in the set.

"Horses or Trucks in the Lumber Business?" is the title

of the leading article in the September-October issue of the "Diamond T. Accelerator," published by the Diamond T. Motor Car Co., Chicago. This article gives the experience of the Thornton-Claney Lumber Co., Chicago, with motor trucks, and will prove of interest to lumber dealers generally.

Steel Stair Plate and Other Steel Building Specialties are described and illustrated in an eight-page booklet, entitled "Flights of Safety," published by A. M. Castle & Co., Chicago. The specialties described are post caps, steel stringers, stair winders, etc.

Traction Elevators for Contractors, together with the engines that operate them are described by text and illustrations 24-page and cover booklet, issued by the Warner Elevator Manufacturing Co., New York City. Specifications of the elevators and of several different types of engines and motors are shown.

The Progress of the Publicity Campaign for Common Brick is described in the September issue of Building Economy, published by the Common Brick Manufacturers' Association of America, the offices of which are in Chicago. There are several other features of this issue which will appeal to building contractors and material dealers.

"Sprays of Victory" is the title of an attractive 14-page and cover booklet containing letters from the war zone of Europe to the DeVilbiss Manufacturing Co., Toledo, by one of its employees. The letters tell how the Aeron system of applying paint by compressed air helped win the war, and are written in a most interesting style.

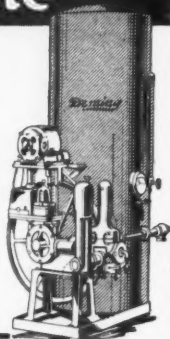
"Building the Nation's Highways" is the subject of the leading article in the September issue of Acme Angles, published by the Acme Motor Truck Co., Cadillac, Mich. The types of motor trucks and how they are used in road building are described by text and illustrations showing

Include the Water System in the estimate

THE low cost of a Deming Hydro-Pneumatic System makes the expense practically negligible when figured in with the total cost of building. The contractor is not only able to plan and deliver a more modern and livable home, but by our special contractor's offer makes a neat additional profit. Write for full details.

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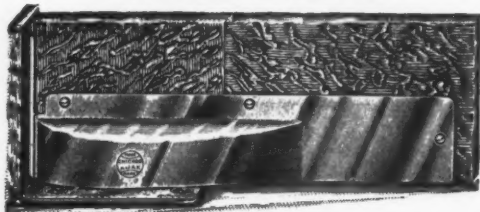
The anvil has been redesigned so that it will perfectly set any Hand Saw. Any One Can Use It.

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Appearance — Economy — Durability The "AJAX"

In the "Ajax" we offer a Floor Spring Hinge with Ball Bearings at the top of the Hinge, away from dust and moisture.

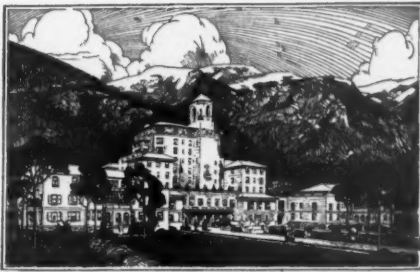
Alignment Adjustment that is easily accessible.

Roller Bearings for the piston, to overcome friction.

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KOHLER

And THE BROADMOOR

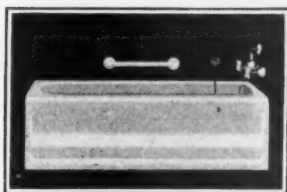
After eighteen holes on the Broadmoor course or a hike through wooded trails, a freshening plunge in a Kohler "Viceroy" Built-in Bath welcomes the Broadmoor guest. White as the snowy Colorado peaks, because Kohler Enamel cleanses so readily, these hygienic baths—low-sided, full-sized, yet setting in less than usual tub space—are everywhere favored by lovers of good living.

* * *

It is very convenient to refer to the "KOHLER of KOHLER" book. A copy for your file on request.

KOHLER OF KOHLER

Kohler Co., Kohler, Wis.
Shipping Point, Sheboygan, Wis.
AND TWELVE AMERICAN BRANCHES



Kohler "Viceroy" Bath
Recess Pattern

MANUFACTURERS OF ENAMELED PLUMBING WARE



"\$100 a week!"

Think What That Means to Us!"

"They've made me Superintendent—and doubled my salary! Now we can have the comforts and pleasures we've dreamed of—our own home, a maid for you, Nell, and no more worrying about the cost of living!"

"The president called me in today and told me. He said he picked me for promotion three months ago when he learned I was studying at home with the International Correspondence Schools. Now my chance has come—and thanks to the I. C. S., I'm ready for it."

Thousands of men now know the joy of happy, prosperous homes because they let the International Correspondence Schools prepare them in spare hours for bigger work and better pay.

Why don't you study some one thing and get ready for a real job, at a salary that will give your wife and children the things you would like them to have?

You can do it! Pick the position you want in the work you like best and the I. C. S. will prepare you for it right in your own home, in your spare time.

Yes, you can do it! More than two million have done it in the last twenty-eight years. More than 100,000 are doing it right now. Without obligation, find out how you can join them. Mark and mail this coupon!

INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 8172, SCRANTON, PA.

Explain, without obligating me, how I can qualify for the position, or in the subject, before which I mark X.

- | | |
|---|---|
| <input type="checkbox"/> ARCHITECT | <input type="checkbox"/> SALESMANSHIP |
| <input type="checkbox"/> Architectural Draftsman | <input type="checkbox"/> ADVERTISING |
| <input type="checkbox"/> Contractor and Builder | <input type="checkbox"/> Window Trimmer |
| <input type="checkbox"/> Building Foreman | <input type="checkbox"/> Show Card Writer |
| <input type="checkbox"/> Concrete Builder | <input type="checkbox"/> Sign Painter |
| <input type="checkbox"/> Structural Engineer | <input type="checkbox"/> BUSINESS MANAGEMENT |
| <input type="checkbox"/> Structural Draftsman | <input type="checkbox"/> Private Secretary |
| <input type="checkbox"/> Ship Draftsman | <input type="checkbox"/> BOOKKEEPER |
| <input type="checkbox"/> Plumber and Steam Fitter | <input type="checkbox"/> Stenographer and Typist |
| <input type="checkbox"/> Heating and Ventilation | <input type="checkbox"/> Higher Accounting |
| <input type="checkbox"/> Plumbing Inspector | <input type="checkbox"/> COMMERCIAL LAW |
| <input type="checkbox"/> Foreman Plumber | <input type="checkbox"/> Common School Subjects |
| <input type="checkbox"/> Sheet Metal Worker | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> CIVIL ENGINEER | <input type="checkbox"/> GOOD ENGLISH |
| <input type="checkbox"/> Surveying and Mapping | <input type="checkbox"/> ILLUSTRATING |
| <input type="checkbox"/> ELECTRICAL ENGINEER | <input type="checkbox"/> Railway Mail Clerk |
| <input type="checkbox"/> Electric Lighting and Rys. | <input type="checkbox"/> CIVIL SERVICE |
| <input type="checkbox"/> Electric Wiring | <input type="checkbox"/> MINE FOREMAN OR ENGR |
| <input type="checkbox"/> Telegraph Engineer | <input type="checkbox"/> Metallurgist or Prospector |
| <input type="checkbox"/> Telephone Work | <input type="checkbox"/> Gas Engine Operating |
| <input type="checkbox"/> MECHANICAL ENGINEER | <input type="checkbox"/> Textile Overseer or Supt. |
| <input type="checkbox"/> Mechanical Draftsman | <input type="checkbox"/> TRAFFIC MANAGER |
| <input type="checkbox"/> Machine Shop Practice | <input type="checkbox"/> AUTOMOBILE OPERATING |
| <input type="checkbox"/> STATIONARY ENGINEER | <input type="checkbox"/> Auto Repairing |
| <input type="checkbox"/> CHEMIST | <input type="checkbox"/> AGRICULTURE |
| <input type="checkbox"/> Navigation | <input type="checkbox"/> Poultry Raising |
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| | <input type="checkbox"/> French |
| | <input type="checkbox"/> Italian |

Name _____
Present _____
Occupation _____
Street _____
and No. _____
City _____ State _____

them at work.

Concrete machinery and equipment are described in a condensed bulletin, issued by the Ransome Concrete Machinery Co., Dunellen, N. J. The bulletin briefly describes the different types of concrete mixers the company makes, and the illustrations show the equipment.

"Bishopric Board, Built on the Wisdom of the Ages," is the title of a most artistic 32-page and cover booklet, issued by the Bishopric Manufacturing Co., Cincinnati, O. The advantages of using prepared sheathing are set forth and stucco board and detail drawings showing construction methods are contained in the booklet, which also is illustrated by a number of half-tone reproductions of photographs of homes and other buildings built of these materials.

"Human Relations in Industry" is the title of an instructive booklet on the duties of employers to employees and the reverse, issued by L. V. Estes, Inc., industrial engineers, Chicago. Co-operative management, profit sharing and kindred subjects are discussed in the booklet, which contains 16 pages and cover.

Concrete block garages and how to build them is the subject matter of an instructive 16-page booklet, entitled "Concrete Block Garages," issued by the Portland Cement Association, Chicago. Many different designs of this sort of garages are shown in the illustrations.

Door hangers, barn equipment and builders' hardware are described and illustrated in the new 144-page and double cover catalog of the Allith-Prouty Co., Danville, Ill. This is an exceptional book in that it is filled with pictures and descriptions of the things hardware dealers sell and builders use.

"Briklath, the Lath That Last," is the title of a 16-page

booklet, issued by the Composite Metal Lath Co., New York City. The booklet not only describes the metal lath the company manufactures, but shows how to apply stucco. It is well illustrated.

A **model building ordinance** to be used by city councils as a guide to legislation controlling building construction is issued by the National Lumber Manufacturers' Association, Chicago. The ordinance is contained in a bound volume of 62 pages.

Copper cable lightning rods and fixtures are described by illustrations and text in a 28-page and cover catalog, issued by the Hawkeye Lightning Rod Co., Riverside, Iowa. The booklet is of especial interest to contractors who sell and install lightning rods.

✦
WE often wonder if lumber dealers make the greatest possible use of the **AMERICAN BUILDER** home designs. They are of the type that makes the prospect want to build. Placing the **AMERICAN BUILDER** at some place in the office where customers will be able to scan its pages while waiting helps sales of building materials, because it will keep their thoughts on the subject of building a home, or some other kind of a building.

✦ How Things Have Changed

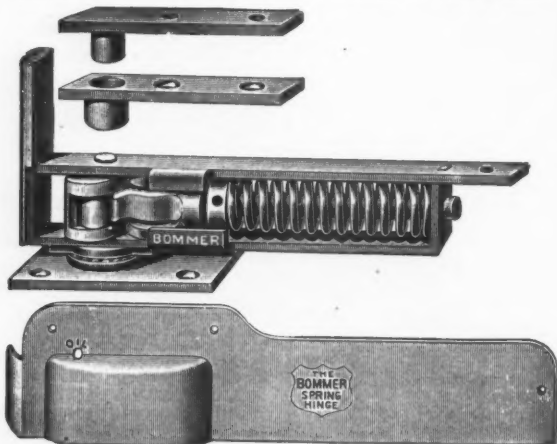
"How are things now, colonel. I remember you used to have a pretty taste in liquors. Drank imported stuff with ginger ale for a chaser."

"Eh-yah. Now I drink bootleg behind a barrel in an alley with a cop for a chaser."—*Kansas City Journal*.

BOMMER

Floor Surface Spring Hinge

Double or Shingle Action, Holdback, Ball Bearing. Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side

Your Hardware Merchant Can Supply Them

Bommer Spring Hinge Company, Brooklyn, N.Y.



Stained with Cabot's Creosote Stain
C. M. Hari, Architect, Bay Shore, N. Y.

Stained Shingles

The Warmest, Most Artistic and Most Economical of all House Finishes

Wood shingles are two or three times warmer than the gummed paper substitutes, and they are cheaper, last longer and are incomparably more artistic and attractive. When stained with the soft, moss-greens, bungalow-browns, tile-reds and silver-grays of

Cabot's Creosote Stains

they have a richness and beauty of tone that no other finish can equal and the creosote thoroughly preserves the wood. Use them also on siding, boards, sheds and fences. Anyone can apply them with best results at least expense.

Cabot's "Quilt"

makes floors and partitions sound-proof by breaking up the sound-waves and absorbing them. It makes walls and roof cold- and heat-proof by a cushion of minute dead air spaces that prevents the conduction of heat. From 28 to 50 times as efficient as cheap building paper.

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